Vol. 998 Number 5

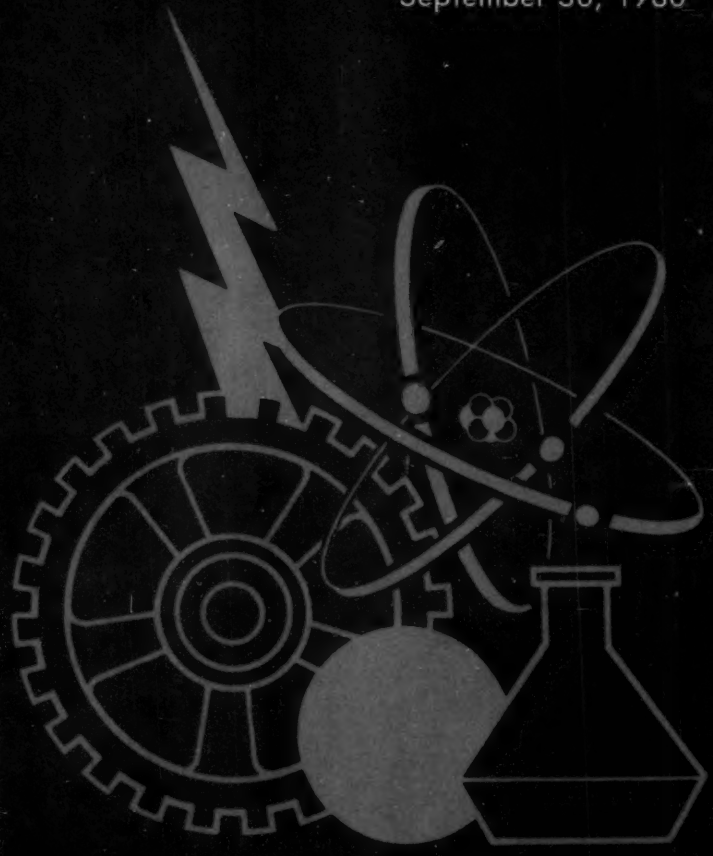
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 30, 1980



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

September 30, 1980 Volume 998 Number 5

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Patents Granted	
General and Mechanical (4,224,692)	1641
Chemical (4,225,309)	1849
Electrical (4,225,744)	1967
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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

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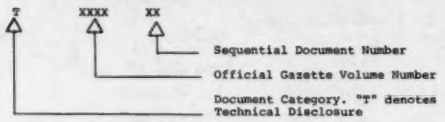
Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Defensive Publication Program

A change in the numbering system of Defensive Publication documents will be implemented, effective with the issue of November 4, 1980.

The numbering system will be as follows:



The numbering system as announced in 869 O.G. 687 remains in effect for the issues of December 16, 1969 through October 1980.

RICHARD J. SHAKMAN,
Date: Sept. 2, 1980. *Assistant Commissioner for Administration.*

DEPARTMENT OF COMMERCE

PATENT AND TRADEMARK OFFICE

37 CFR Part 4

Forms for Trademark Cases; Correction of Section Numbering

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Correction of final rule.

SUMMARY: This notice corrects an error in section numbering which was inadvertently made when the revised trademark forms were adopted on January 1, 1979.

EFFECTIVE DATE: August 25, 1980.

ADDRESS: Information regarding the revised trademark forms which were adopted on January 1, 1979 is available for public inspection in Room 11E10, Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Va.

FOR FURTHER INFORMATION CONTACT: Peter Harab by telephone at (703) 557-5380 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: FR Doc. 78-33097 which was published in the FEDERAL REGISTER of November 28, 1978 (43 FR 55395) and in the OFFICIAL GAZETTE of January 2, 1979 (978 OG 118 and 978 TMOG 118) refers to section "4.16" in paragraph No. 15 on page 55400. The section number should be "4.16a."

FR Doc. 78-33097 is corrected as follows:

In paragraph No. 15 on page 55400, the two references to "4.16" are changed to read "4.16a."

MARGARET M. LAURENCE,
Dated: Aug. 5, 1980. *Acting Commissioner of Patents and Trademarks.*

FRANCIS W. WOLEK,
Approved: Aug. 11, 1980. *Acting Assistant Secretary for Productivity, Technology, and Innovation.*

[FR Doc. 80-25818 Filed 8-22-80; 8:45 am]

Board of Appeals Decisions Rendered in the Month of August 1980

Affirmed	193
Affirmed in part	12
Reversed	75
Total	280

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,644,457, Re. S.N. 163,115, Filed Jun. 26, 1980, Cl. 260/453 SP, PREPARATION OF STABLE LIQUID DIPHENYL-METHANE DIISOCYANATES, Klaus Konig, et al., Owner of Record: *Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany,* Attorney or Agent: Gene Harsh, et al., Ex. Gp.: 121

4,018,656, Re. S.N. 119,701, Filed Feb. 8, 1980, Cl. 203/11, THERMAL SOFTENING AND DISTILLATION BY REGENERATIVE METHOD, Alfred N. Rogers, et al., Owner of Record: *Bechtel International Corporation,* Attorney or Agent: John L. McGannon, Ex. Gp.: 177

4,093,018, Re. S.N. 155,194, Filed Jun. 2, 1980, Cl. 164/32, CASTING METHODS WITH COMPOSITE MOLDED CORE ASSEMBLY, David V. Trumbauer, Owner of Record: *Deere & Company, Moline, Ill.,* Attorney or Agent: Ex. Gp.: 324

4,095,729, Re. S.N. 162,601, Filed Jun. 24, 1980, Cl. 225/42, FILTER PAPER DISPENSER, Anthony W. Butera, Owner of Record: *Inventor,* Attorney or Agent: Anthony W. Butera, Ex. Gp.: 323

4,097,707, Re. S.N. 162,774, Filed Jun. 25, 1980, Cl. 219/10.55 B, APPARATUS FOR CONTROLLING HEATING TIME UTILIZING HUMIDITY SENSING, Tetsu Kobayashi, et al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan,* Attorney or Agent: Davidson C. Miller, et al., Ex. Gp.: 213

4,104,773, Re. S.N. 165,055, Filed Jul. 1, 1980, Cl. 29/127, ROLL MANUFACTURING METHOD AND ROLL PARTICULARLY FOR PAPER MACHINES, Vaino Sailas, Owner of Record: *Valmet Oy, Helsinki, Finland,* Attorney or Agent: Harold D. Steinberg, Ex. Gp.: 353

4,117,827, Re. S.N. 162,902, Filed Jun. 25, 1980, Cl. 126/288, FIREPLACE CONSTRUCTION, Thomas F. Billmeyer, Owner of Record: *Preway Inc., Wisconsin Rapids, Wis.,* Attorney or Agent: Ernest A. Wegner, Ex. Gp.: 345

4,118,977, Re. S.N. 161,123, Filed Jun. 19, 1980, Cl. 73/141 R, ELECTRIC SIGNAL TRANSMITTER FOR VIBRATING-WIRE SENSOR, Everett O. Olsen, et al., Owner of Record: *The Foxboro Company, Foxboro, Mass.,* Attorney or Agent: Howard M. Bollinger, et al., Ex. Gp.: 244

4,128,315, Re. S.N. 160,384, Filed Jul. 17, 1980, Cl. 128/687, APPARATUS AND METHOD FOR DETECTION OF BODY TISSUE MOVEMENT, Ran Vas, et al., Owner of Record: *Cardiokinetics, Inc., Seattle, Wash.,* Attorney or Agent: Robert J. Schaap, et al., Ex. Gp.: 335

4,154,654, Re. S.N. 162,919, Filed Jun. 25, 1980, Cl. 435/31 P, METHOD FOR PREPARING POLYSACCHARIDES, Jean-Claude Campagne, Owner of Record: *Rhone Poulenc Industries, Paris, France,* Attorney or Agent: William L. Mathis, Ex. Gp.: 172

4,157,174, Re. S.N. 098,912, Filed Nov. 30, 1979, Cl. 269/139, COLLAPSIBLE WORKBENCHES, Ronald Price Hickman, et al., Owner of Record: *Inventec International Ltd., Point Robert, Sark, Channel Islands,* Attorney or Agent: Granville M. Brumbaugh, et al., Ex. Gp.: 323

4,161,449, Re. S.N. 163,800, Filed Jun. 27, 1980, Cl. 252/8.6, POWDERED CARPET COMPOSITION, James A. Smith, et al., Owner of Record: *Airwick Industries, Inc., Carlstadt, N.J.,* Attorney or Agent: Hugh A. Chapin, et al., Ex. Gp.: 144

4,173,803, Re. S.N. 162,131, Filed Jun. 23, 1980, Cl. 5/13, SOFA-SLEEPER, Ronald J. Kennedy, Owner of Record: *Leggett & Platt, Incorporated, Carthage, Mo.,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 355

4,177,345, Re. S.N. 159,870, Filed Jun. 16, 1980, Cl. 536/59, PROCESS FOR PREPARING A SULFATE ESTER OF A POLYHYDROXY POLYMER, Richard G. Schweiger, Owner of Record: *Inventor,* Attorney or Agent: Mario A. Martella, et al., Ex. Gp.: 144

4,177,705, Re. S.N. 162,777, Filed Jun. 25, 1980, Cl. 84/1.16, STRINGLESS ELECTRONIC MUSICAL INSTRUMENT, Fred J. Evangelista, Owner of Record: *Inventor,* Attorney or Agent: Arthur Schwartz, Ex. Gp.: 217

4,178,092, Re. S.N. 162,610, Filed Jun. 24, 1980, Cl. 355/3 R, ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH GAS EVACUATING MEANS, Shunji Yamamoto, et al., Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 212

4,181,849, Re. S.N. 163,759, Filed Jun. 27, 1980, Cl. 235/92 T, VITAL RELAY DRIVER HAVING CONTROLLED RESPONSE TIME, Henry C. Sibley, Owner of Record: *General Signal Corporation, Stamford, Conn.,* Attorney or Agent: Milton E. Kleinman, Ex. Gp.: 233

4,192,116, Re. S.N. 163,166, Filed Jun. 26, 1980, Cl. 52/469, TAPED AND DOUBLE GLUED RUBBER JOINT, Thomas L. Kelly, Owner of Record: *Inventor,* Attorney or Agent: Philip V. W. Peck, Ex. Gp.: 354

PATENT NOTICES

Certificates of Correction for Sept. 30, 1980

Re. 29,857	4,180,653	4,198,524	4,206,554
4,039,666	4,180,965	4,198,842	4,206,767
4,041,180	4,181,006	4,198,860	4,207,281
4,047,143	4,182,969	4,199,409	4,207,474
4,053,810	4,183,948	4,199,824	4,207,851
4,060,534	4,186,094	4,201,338	4,207,976
4,066,788	4,187,120	4,201,624	4,208,138
4,072,722	4,187,285	4,201,960	4,208,258
4,105,391	4,187,545	4,202,399	4,208,624
4,120,126	4,187,720	4,202,504	4,208,747
4,144,199	4,187,827	4,202,661	4,208,865
4,154,922	4,188,124	4,203,481	4,208,930
4,158,449	4,188,664	4,203,882	4,209,360
4,160,807	4,191,659	4,203,900	4,209,556
4,164,794	4,191,704	4,203,960	4,209,623
4,170,527	4,191,738	4,204,688	4,210,486
4,174,441	4,191,756	4,204,724	4,210,830
4,177,219	4,192,893	4,205,717	4,211,247
4,177,406	4,197,981	4,206,230	4,212,692
4,178,618	4,198,115	4,206,296	4,212,940

Erratum

In the notice of Certificates of Correction appearing in the OFFICIAL GAZETTE of Sept. 16, 1980, Patent No. 4,125,399 was erroneously listed and should be deleted to insert Patent No. 4,152,399.

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,813,868, H. Lorenz, FRICTION FALSE-TWISTING DEVICE, Interference No. 99,763, decided Feb. 7, 1980, Claim 2.

Patent No. 3,911,483, N. Kihara, Y. Machida, APPARATUS AND METHOD FOR RECORDING AND REPRODUCING A VIDEO SIGNAL IN SUCCESSIVE RECORD TRACKS ON A RECORD SHEET WITHOUT GUARD BANDS BETWEEN ADJACENT TRACKS, Interference No. 99,769, decided Mar. 17, 1980, Claims 2, 4–8, 11–15, 17, 19–22, and 24.

Patent No. 3,957,544, K. E. Pinnow, J. P. Bressanelli, FERRITIC STAINLESS STEELS, Interference No. 100,122, decided June 19, 1980, Claims 3 and 5.

Patent No. 3,967,090, M. Hamasaki, F. Tateiwa, PROCESS FOR CONSUMABLE-ELECTRODE TYPE ARC CUTTING AND APPARATUS THEREFOR, Interference No. 99,816, decided May 2, 1980, Claim 1.

Patent No. 3,993,491, N. Feldstein, ELECTROLESS PLATING, Interference No. 99,915, decided Mar. 26, 1980, Claims 1 and 4.

Patent No. 4,004,226, S. U. H. Qureshi, G. D. Forney, Jr., QAM RECEIVER HAVING AUTOMATIC ADAPTIVE EQUALIZER, Interference No. 100,015, decided June 10, 1980, Claims 1–6, 9 and 10.

Patent No. 4,027,688, K. Gruber, W. Keim, K. Hentschel, TRANSPORTATION OF FOSSIL FUEL MATERIALS, Interference No. 99,856, decided Mar. 17, 1980, Claims 1, 2 and 3.

Patent No. 4,040,152, C. Gilgallon, SADDLE FOR U-BOLT CLAMP, Interference No. 99,998, decided Apr. 30, 1980, Claim 1 and 8.

Patent No. 4,049,848, C. W. Goodale, C. W. Morgan, A. L. Rhoton, TEXTURED FOAM COATED URETHANE WALL AND CEILING COVERING AND METHOD OF MAKING THE SAME, Interference No. 100,274, decided May 22, 1980 Claims 1 and 34.

Patent No. 4,057,977, L. B. Chambless, REVERSE CYCLE HEAT PUMP CIRCUIT, Interference No. 100,222, decided July 24, 1980. Claims 1–5.

Patent No. 4,063,742, S. Watkins, Jr., ABRADABLE FLUID SEAL FOR AIRCRAFT GAS TURBINES, Interference No. 100,259 decided June 12, 1980, Claim 5.

Patent No. 4,141,691, J. M. Antonetti, G. F. Snow, USE OF WATER SOLUBLE POLYMERS IN COAL FLOTATION CIRCUITS, Interference No. 100,425, decided July 24, 1980, Claims 1 and 2.

NANNIE B. HENRY,
Deputy Clerk, Board of Patent Interferences.

Disclaimers

3,709,206. *Richard Stanley Myers,* Branchburg, N.J. REGULATED IGNITION SYSTEM. Patent dated Jan. 9, 1973. Disclaimer filed Jan. 10, 1977, by the assignee *RCA Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,876,613.—*Donald G. Needham, George R. Hill* and *Robert J. Martinovich,* Bartlesville, Okla. ROTATIONAL MOLDING AND COMPOSITIONS THEREFOR. Patent dated Apr. 8, 1975. Disclaimer filed Aug. 12, 1980, by the assignee, *Phillips Petroleum Company.*

Hereby enters this disclaimer to claims 1–12 of said patent.

3,923,910.—*Julius Diamond,* Lafayette Hill, Pa. ETHYNYLBENZENE COMPOUNDS AND DERIVATIVES THEREOF. Patent dated Dec. 2, 1975. Disclaimer filed June 23, 1980, by the assignee, *William H. Rorer, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,953,150.—*Hasan F. Onal,* Denver, Colo. IMPELLER APPARATUS. Patent dated Apr. 27, 1976. Disclaimer filed Apr. 4, 1977, by the assignee, *Sundstrand Corporation.*

Hereby enters this disclaimer to claims 2, 3 and 4 of said patent.

3,982,469.—*Donald L. Bianchetta,* Coal City, Ill. APPARATUS FOR CONTROLLING WORK ELEMENT OPERATING PRESSURES IN A FLUID SYSTEM. Patent dated Sept. 28, 1976. Disclaimer filed Aug. 8, 1980, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to all claims of said patent.

4,069,591.—*Bill W. McArthur,* Wallis, Tex. ELASTOMERIC INCLINOMETER. Patent dated Jan. 24, 1978. Disclaimer filed Mar. 20, 1978, by the assignee, *Sperry-Sun, Inc.*

Hereby enters this disclaimer to claims 9 and 10 of said patent.

4,138,353.—*Richard J. Lipinski*, Aurora, Ohio. CORROSION INHIBITING COMPOSITION AND PROCESS OF USING SAME. Patent dated Feb. 6, 1979. Disclaimer filed Aug. 7, 1980, by the assignee, *The Mogul Corporation*.

Hereby enters this disclaimer to claims 1, 2, 3, 6, 7, 8, 9, 10, 13, 18 and 21 of said patent.

4,158,409.—*Simon Duinker*, Bloemendaal-Molan, Netherlands. PACKING FOR SINGLE FILMS. Patent dated June 19, 1979. Disclaimer filed Aug. 7, 1980, by the inventor.

Hereby enters this disclaimer to claims 16–21 of said patent.

Dedications

3,716,728.—*Victor Hachenburg*, Naperville, Ill. MINIMUM DELAY DATA TRANSFER ARRANGEMENT. Patent dated Feb. 13, 1973. Dedication filed Feb. 15, 1978, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,858,036.—*John Albert Lunsford*, Delran, N.J. SQUARE ROOT OF SUM OF SQUARES APPROXIMATOR. Patent dated Dec. 31, 1974. Dedication filed Sept. 30, 1976, by the assignee, *RCA Corporation*.

Hereby dedicates said patent to the Public.

4,179,723.—*Anthony Spencer*, Mamaroneck, N.Y. KIOSK UNIT. Patent dated Dec. 18, 1979. Dedication filed June 20, 1980, by the inventor.

Hereby dedicates said patent to the People of the United States of America.

Patents Available for Licensing or Sale

D. 246,284. DEVICE FOR REMOVING SHEETS FROM A FILE OF PAPERS. Edelmiro Dalas Arce, E. 18 Temple St., Santa Ana Rio Piedras, Puerto Rico 00927.

4,096,647. LEARN TO DRESS MANUAL. James R. Barry, 160 Regent St., Lincoln, Ill. 62656.

4,116,836. CHROMATOGRAPHIC COLUMN. William M. DeAngelis, 961 Gren Meadow Lane, Mamaroneck, N.Y. 10543, Attn: Henry E. Allen, assignee.

4,163,228. ELECTRONIC DISPLAY SYSTEM FOR SIGNING BUSINESS. Kambiz Sadjadi, 5969 East Northwest Highway #3071, Dallas, Tex. 75231.

4,202,570. DOOR LOCK FOR SLIDING DOORS. Robert J. Riggins, Sr., 5150 Mercury Court, Boise, Idaho 83705.

4,189,844. CHALK LINE PROTRACTING TOOL.

4,195,406. SCRIBE KNIFE. Gilliam B. Lackey, 406 N. Harrison St., Aurora, Ill. 60506.

General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to Patent Counsel, Gas Turbine Division, General Electric Company, 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,210,269. METHOD FOR DIFFUSION BONDING SHEET CLADDINGS TO SUPERALLOY SUBSTRATES.

Application for license may be addressed to: Patent Counsel, Large Transformer Business Division, General Electric Company, 100 Woodlawn Ave., Pittsfield, Mass. 01201.

4,161,638. VACUUM INTERRUPTER LATCH RELEASE MECHANISM.

4,174,509. FURNACE TRANSFORMER HAVING A LOW VOLTAGE INTERNALLY CONNECTED DELTA WINDING.

4,195,686. HEAT EXCHANGER AIR DEFLECTOR.

4,204,238. SURGE VOLTAGE LIGHTING ARRESTERS.

Application for license may be addressed to: Group Patent Counsel, Lighting Business Group, General Electric Company, Nela Park, Cleveland, Ohio 44112.

Re. 30,274 METHOD FOR MAKING A CIRCUIT BOARD AND ARTICLE MADE THEREBY.

Application for license may be addressed to: Group Patent Counsel, Major Appliance Business Group, General Electric Company, Appliance Park, Louisville, Ky. 40225.

3,811,370. ROOM AIR CONDITIONER MOUNTING ARRANGEMENT.

3,813,193. ROTARY COMPRESSOR INCLUDING MEANS FOR REDUCING VANE SLOT WEAR.

3,934,691. ICE DISPENSING SYSTEM OF A REFRIGERATOR-FREEZER.

4,039,940. CAPACITANCE SENSOR.

4,087,141. DOOR PULL HANDLE ASSEMBLY.

4,090,092. SHIELDING ARRANGEMENT FOR A CAPACITIVE TOUCH SWITCH DEVICE.

4,150,668. REMOVABLE FLUID TAKE-OFF AND PRESSURE RELEASE COUPLING FOR WASHING MACHINE AND THE LIKE.

4,179,898. VAPOR COMPRESSION CYCLE DEVICE WITH MULTICOMPONENT WORKING FLUID MIXTURE AND METHOD OF MODULATING ITS CAPACITY.

4,201,345. FOOD CUTTER FOR DISHWASHER.

4,205,537. MULTIPLE HERMETIC-MOTOR COMPRESSOR IN COMMON SHELL.

4,207,753. DRAIN SYSTEM FOR HOUSEHOLD REFRIGERATOR.

Applications for license may be addressed to: General Electric Company, Component Motor Division, 1635 Broadway, Fort Wayne, Ind. Attention: Patent Counsel.

3,745,391. DYNAMOELECTRIC MACHINE HAVING IMPROVED HOUSING, BEARING AND SUPPORT STRUCTURE.

3,748,510. DYNAMOELECTRIC MACHINE WINDING CONNECTION INSULATOR.

3,758,799. DYNAMOELECTRIC MACHINE.

3,815,206. WIRE PROTECTING COIL PLACING METHOD AND APPARATUS.

3,974,324. METHOD FOR MAKING POLYIMIDE COATED CONDUCTORS IN A CONTINUOUS MANNER AND PRODUCTS MADE THEREBY.

4,100,005. METHOD OF MAKING A DYNAMOELECTRIC MACHINE INSULATOR.

4,184,658. CUSHION MOUNT FOR PRIME MOVER.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corporation, Sr. Vice President, Licensing, 30 Rockefeller Plaza, New York, N.Y. 10020.

Re. 30,271. SIDE PINCUSHION CORRECTION SYSTEM.

4,201,603. METHOD OF FABRICATING IMPROVED SHORT CHANNEL MOS DEVICES UTILIZING SELECTIVE ETCHING AND COUNTER-DOPING OF POLYCRYSTALLINE SILICON.

4,201,927. CIRCUITS FOR PRODUCING SEQUENTIALLY SPACED PULSES.

4,201,932. COLOR PURITY ADJUSTING METHOD.

4,201,947. LONG-TAILED-PAIR CONNECTIONS OF MOSFET'S OPERATED IN SUB-THRESHOLD REGION.

4,201,965. INDUCTANCE FABRICATED ON A METAL BASE PRINTED CIRCUIT BOARD.

4,201,970. METHOD AND APPARATUS FOR TRIMMING RESISTORS.

4,202,001. SEMICONDUCTOR DEVICE HAVING GRID FOR PLATING CONTACTS.

4,202,006. SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE.

4,202,594. RF CONNECTOR ASSEMBLY INCLUDING MOUNTING APPARATUS FOR A WASHER-LIKE CAPACITOR.

4,202,703. METHOD OF STRIPPING PHOTORESIST.

4,202,928. UPDATEABLE OPTICAL STORAGE MEDIUM.

4,203,002. CODE CORRELATOR LOOP USING ARITHMETIC SYNTHESIZER.

4,203,063. MOVEMENT DETECTING APPARATUS AND METHOD.

4,203,131. PREDICTABLE AUTOMATIC BRIGHTNESS CONTROL CIRCUIT IN A VIDEO SIGNAL IMAGE REPRODUCING SYSTEM.

4,203,134. FM SIGNAL DEMODULATOR WITH DEFECT DETECTION.

4,203,785. METHOD OF EPITAXIALLY DEPOSITED CADMIUM SULFIDE.

4,204,133. TEMPERATURE-SENSITIVE CONTROL CIRCUITS.

4,204,147. POWER TRANSFER APPARATUS.

4,204,171. FILTER WHICH TRACKS CHANGING FREQUENCY OF INPUT SIGNAL.

4,204,173. TUNING CIRCUIT WITH PROVISIONS FOR REDUCING PULSE WIDTH JITTER.

4,204,217. TRANSISTOR USING LIQUID CRYSTAL.

4,204,220. DUAL STANDARD VIDEO DISC PLAYER.

4,204,221. PREDICTABLY BIASED KINESCOPE DRIVER ARRANGEMENT IN A VIDEO SIGNAL PROCESSING SYSTEM.

4,204,227. TELEVISION PICTURE COMPRESSOR.

4,204,549. COAXIAL APPLICATOR FOR MICROWAVE HYPERTHERMIA.

4,205,265. LASER BEAM APPARATUS AND METHOD FOR ANALYZING SOLAR CELLS.

4,207,591. GATED AUTOMATIC BEAM CURRENT LIMITER IN A VIDEO SIGNAL PROCESSING SYSTEM.

4,207,592. AUTOMATIC KINESCOPE BIAS CONTROL CIRCUIT.

4,207,603. SURGE PROTECTION OF FULL-WAVE RECTIFIER BY BIASED IONIZATION TUBE.

4,208,730. PRECHARGE CIRCUIT FOR MEMORY ARRAY.

4,209,347. MOUNTING FOR SOLAR CELL.

4,209,731. MAGNETIC SWITCHING REGULATOR FOR A DEFLECTION CIRCUIT.

4,209,732. REGULATED DEFLECTION CIRCUIT.

4,209,801. SYSTEM FOR INCREASING THE SHARPNESS IN A TELEVISION PICTURE.

4,209,808. STABILIZED AUTOMATIC BRIGHTNESS CONTROL NETWORK IN A VIDEO SIGNAL PROCESSING SYSTEM INCLUDING AN AUTOMATIC KINESCOPE BEAM CURRENT LIMITER.

Re. 30,297. CURRENT AMPLIFIER.

4,205,415. FOOD PRODUCT EXTRUSION APPARATUS.

4,205,853. RECORD SIDE IDENTIFICATION APPARATUS FOR VIDEO DISC PLAYER.

4,206,256. METALLIZED VIDEO DISC HAVING AN INSULATING LAYER THEREON.

4,206,371. CCD WITH DIFFERENTLY DOPED SUBSTRATE REGIONS BENEATH A COMMON ELECTRODE.

4,206,372. REDUCTION OF SPARKLE NOISE IN CCD IMAGERS.

4,206,418. CIRCUIT FOR LIMITING VOLTAGE DIFFERENTIAL IN DIFERENTIAL AMPLIFIERS.

4,206,424. DIGITIZED PHASE MODULATING MEANS.

4,206,425. DIGITIZED FREQUENCY SYNTHESIZER.

4,206,446. CCD A-TO-D CONVERTER.

4,206,457. COLOR DISPLAY USING AUXILIARY MEMORY FOR COLOR INFORMATION.

4,206,474. LOW PASS FILTER WITH REMOTELY CONTROLLABLE RISE TIME.

4,206,477. OPTICAL RECORDING WITH TRACK DROP COMPENSATION.

4,206,648. IMPEDANCE MEASURING CIRCUIT.

4,206,926. VIDEO DISC PLAYER HAVING RECORD SIDE IDENTIFICATION APPARATUS.

4,207,000. WAVEGUIDE METHOD FOR DETERMINING STRESS AT THE CONVEX SURFACE OF A BODY.

4,207,107. NOVEL ORTHO-QUINONE DIAZIDE PHOTORESIST SENSITIZERS.

4,207,138. MERCURY VAPOR LEACHING FROM MICROELECTRONIC SUBSTRATES.

4,207,476. EXCLUSIVE OR CIRCUIT.

4,207,493. CATHODE RAY TUBE ARC-OVER PROTECTION.

4,207,516. SWITCHING REGULATOR WITH REDUCED INRUSH CURRENT.

4,207,526. PRE-PROCESSING APPARATUS FOR FM STEREO OVERSHOOT ELIMINATION.

4,207,527. PRE-PROCESSING APPARATUS FOR FM STEREO OVERSHOOT ELIMINATION.

4,207,532. FREQUENCY SIGNAL SPLITTING CIRCUIT.

4,207,538. TEMPERATURE COMPENSATION CIRCUIT.

4,207,590. COMBINED PHASE SHIFT AND FILTER NETWORK IN A COLOR VIDEO SIGNAL PROCESSING SYSTEM EMPLOYING DYNAMIC FLESH TONE CONTROL.

The Electric Power Research Institute offers to grant nonexclusive licenses on reasonable terms and conditions under the patent applications listed below. Inquiries respecting licenses should be addressed to John P. Taylor, Manager of Patent Administration and Licensing, Electric Power Research Institute, P.O. Box 10412, Palo Alto, Calif. 94303.

KD386–01–04–1. Vaned Anode for High-Intensity Ionizer Stage of Electrostatic Precipitator.

KD0386–01–01. Apparatus and Method for Ionizing Gases, Electrostatically Charging Particles, and Electrostatically Charging Particles or Ionizing Gases for Removing Contaminants From Gas Streams.

KD0386–01–03–1. Focusing Electrodes for High-Intensity Ionizer Stage of Electrostatic Precipitator.

KD0386–01–02–1. Resistive Anode for Corona Discharge Devices.

KD0404–01–01. Assembly for and Method of Sampling Particle-Laden Fluids and a Cascade Impactor Used Therewith.

KD0235–14–01. Water Cooled Burner Nozzle for Solvent Refined Coal.

KD0357–01–08. Gegas-D Coal Gasifier Grate Design for Clinker Crusher.

KD0357–01–09. Membrane Package for Immobilized Liquid Membrane.

ED1234–76–04. Prevention of Solids Formation in SRC Reactors.

ED1234–74–04. Reactor for Solvent Refined Coal and Method.

KD0410–01–03. Phenolic Recycle Solvent in Two-Stage Coal Liquefaction Process.

KD0410–01–08. Process for Coal Liquefaction.

KD0410–01–01. Treatment of Coal for the Production of Clean Solid Fuel and/or Liquid Turbine Fuel.

KD0410–01–07. Two-Stage Coal Liquefaction.

KD0408–01–05. Process for Coal Liquefaction and Catalyst.

KD0774–01–01. Enchanced Anti-Solvent Sedimentation of Solids From Liquids Using Pressurized Carbon Dioxide Gas.

KD0361–02–03. Hydroprocessing Coal Liquids.

KD0361–02–04. Hydroprocessing of Solvent Refined Coal.

KD0361–01–01. Method for Hydroprocessing Solvent Refined Coal.

KD0361–01–02. Method of Improving Compatibility of Coal Liquids With Petroleum Base Fuels.

ED0832–76–17. Synthetic Liquid Fuels.

KD0234–03–05. Bucket Tip Construction for Open Circuit Liquid-Cooled Turbines.

KD0421–01–01. Ceramic Rotor Blade Having Root With Double Curvature.

KD0234–02–02. Improved Cooling System for a Gas Turbine Using V-Shaped Notch Weirs.

KD0234–01–09. Liquid-Cooled Gas Turbine Buckets.

KD0234–02–01. Liquid-Cooled Transition Member and Method of Manufacture of the Transition Member.

KD0234–01–12. Liquid-Cooled Turbine Rotor.

KD0421–01–06. Multiple-Piece Ceramic Turbine Blades.

KDO234–01–05. Rotor Disc Coupling Means.

KD0234–01–15. Turbine Rotor Tip Water Collector.

KD0469–03–01. Brush Actuation Mechanism.

KD0790–01–01. Thermophotovoltaic Converter and Cell for Use Therein.

KD0128–04–11. A Sodium Sulfur Cell.

KD0128–04–10. A Composite Sulfur Electrode Container and Method of Manufacture.

KD0128–04–12. A Method for Forming a Chromium Alloy on a Ferrouscarbon Substrate.

KD0128–04–07. A Sodium Sulfur Cell Component Protected by a High Chromium Alloy and Method for Forming.

KD0635–01–01. Metal-Halogen Cell Operation With Storage of Halogen Via Organic Complexation External to the Electrochemical Cell.

KD0635–01–03. Metal-Halogen Battery Having Reduced Dendrite Growth and Method.

KD0128–04–19. Method of Making a Double Carbon Mat-Composite Sulfur Electrode for Use in Sodium Sulfur Cells.

KD0128–03–10. NA/S Reactant Container With Protective Resin Coating.

KD0128–03–12. Sodium Sulfur Battery.

KD0269–01–01. Multiple Ring Inertial Energy Storage Wheel With Improved Inter-Ring Connector.

KD0269–01–05. Inertial Energy Storage Rotor With Gension-Balance Catenary Spokes.

KD0583–01–02. Highly Dispersed Supported Group VIII Metal-Phosphorus Compounds and Highly Dispersed, Supported Group VIII Metal-Arsenic Compounds and a Process for Making Said Compounds.

KD0583–01–03. The Preparation of Highly Dispersed Supported Group VIII Metal Catalysts and the Redispersion of Sintered or Agglomerated Supported Group VIII Metal Catalysts by the Addition of Phosphorus.

KD0544–01–06. Heating and Cooling System and Method.

KD0544–01–01. Loss Heat Suppression Apparatus and Method for Heat Pump.

KD0544–01–05–1. Fuel Fired Supplementary Heater for Heat Pump.

KD0544–01–04–1. Apparatus for Defrosting Low Temperature Heat Exchanger.

KD0504–01–01. Method & Apparatus for Ultrasonically Measuring Concentrations of Stress.

KD0606–01–01. A Linear Transducer Array and Method for Both Pulse-Echo and Holographic Acoustic Imaging.

KD0608–01–02. A Method of Improving the Efficiency of Generating Elastic Waves Using Electromagnetic Transducers.

KD0606–01–02. Method and Apparatus for Energizing an Array of Acoustic Transducers to Eliminate Grating Lobes.

KD7837–01–04. Insulation Spacer for Flexible Gas-Insulated Transmission Line.

KD7837–01–08. Self-Contained Flexible Bus Reel Assembly.

KD7840–01–03. Welded Joint in Segmented Sheath for Compressed Gas Insulated Transmission Lines.

ED7855–78–12. Method of Forming Dielectrical Material for Electrical Cable and Resulting Structure.

KD7841–01–01. Backfilling Material and Method of Preparation Thereof.

ED0476–77–22. Vacuum Arc Current Switching Device.

ED0281–76–58. AC Fault Current Limiting Circuit.

KD0281–02–09. Chemically Activated Switch.

KD0478–01–02. Circuit Interrupter Using a Minimum of Dielectric Liquid.

KD0478–01–03. Circuit Interrupter Using Dielectric Liquid With Energy Storage.

KD0564–01–03. Current Interrupter Electrode Configuration.

KD0654–01–01. Current Limiting Circuit Arrangement.

KD0281–02–07. Explosively Activated Fault Current Limiter.

KD0281–02–01. Fault Current Limiting Resistor.

KD0655–01–04. High Voltage Plain Break Circuit Interrupter.

KD0564–01–08. Improved Current Limiter Vacuum Envelope.

KD0754–01–03. Structurally Improved Rod Array Vacuum Interrupter.

KD0564–01–02. Vacuum Arc Switching Device With Internal Shielding.

KD0564–01–04. Vacuum Envelope for Current Limiter.

ED0564–76–43. Vacuum Interrupter Configuration.

KD0564–01–06. Vacuum-Type Circuit Interrupter.

KD0657–01–02. A Method for Forming Zinc Oxide-Containing Ceramics by Hot Pressing and Annealing.

KD0657–01–06. A Setter for a Ceramic Body and Method of Formation and Use.

KD0657–01–04. A Voltage Limiting Composition and Method of Fabricating the Same.

KD0657–01–07. Gapless Surge Arrester.

KD0657–01–01. Method for the Nondestructive Testing of Voltage Limiting Blocks.

KD0560–01–01. Current Based Power Supply.

KD0750–01–01. Voltage Regulator Utilizing a Static Var Generator.

KD0750–01–02. Voltage Regulator Utilizing a Static Var Generator With Half Period Averaging and Saturating Type Firing Angle Control.

KD0669–02–01. Thyristor With Segmented Turn-On Line.

KD0699–01–01. Light-Activated Semiconductor Device Package Unit.

KD0669–01–07. Multigate Light Fired Thyristor and Method.

KD0669–01–08. Multiple Gated Light Fired Thyristor With Non-Critical Light Pipe Coupling.

KD0567–01–03. Package for Light-Triggered Thyristor.

KD0669–01–05. Thyristor With Even Turn-On Line Potential and Method.

KD0669–01–06. Thyristor With Voltage Breakover Current Control and Method.

KD0567–01–03–1. Package for Light-Triggered Thyristor.

KD0668–01–06. Data Transmission System and Method.

KD0930–01–21. Vaporization-Cooled Electrical Apparatus.

KD0930–01–17. Vaporization-Cooled Electrical Inductive Apparatus.

KD0930–01–15. Vaporization-Cooled Electrical Apparatus.

ED0429–77–07. A Stored Field Superconducting Electrical Machine and Method.

KD0429–02–03. An Auxiliary Field Winding for a Superconductive Alternating Current Electrical Machine and Method of Exciting Same.

KD0429–02–04. Apparatus for Supporting a Stator Winding in a Superconducting Generator.

KD0429–01–05. Extra High Voltage Winding for Turbine Generator.

ED0429–76–56. High Voltage DC Transmission System and Method.

KD0429–01–03. Improved Method and Apparatus for Operating Generator in its Superconducting State.

KD0429–02–02. Method and Apparatus for Cooling a Winding in the Rotor of an Electrical Machine.

KD0429–01–07. Radiation Shield for Use in a Superconducting Generator or the Like and Method.

KD0794–01–01. System for Detecting Foreign Particles or Voids in Plastic Material and Method.

KD0794–01–02. System for Detecting Foreign Particles or Voids in Electrical Cable Insulation Method.

KD0429–01–09. Superconducting Generator and Method.

KD0429–02–01. Superconducting Generator Thermal Radiation Shield Having Substantially Uniform Temperature.

KD0429–01–02–1. Multiphasic Pump for Rotating.

KD0429–01–01–1. Sliding Support for a Superconducting Generator Rotor.

KD0661–01–07. ARC Spinner Interrupter With Chromium Copper Arcing Contact.

KD0661–01–06. ARC Spinner Interrupter With Contact Follower.

KD0661–01–01. Hybrid Power Circuit Breaker.

KD0661–01–05. Moving Contact for Localized Gas Flow ARC Spinner Type Interrupter.

KD0661–01–03. Thin ARC Runner for ARC Spinner Interrupter.

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National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG
Chief, Intellectual Property Division, Room 2D 444
Pentagon, Washington, D.C. 20310

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AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

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Washington, D.C. 20545

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Branch of Patents, 18th and C Sts., NW.
Washington, D.C. 20240

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U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

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Assistant General Counsel for Patent Matters—NASA
Code GP–2, Washington, D.C. 20546

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CONDITION OF PATENT APPLICATIONS AS OF AUGUST 23, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-16-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-7-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-11-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	2-4-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-29-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-29-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-9-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	10-4-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	6-3-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-29-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-3-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	4-2-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during August 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,009,837 to 3,102,269, inclusive
Plant Patents..... Numbers 2,271 to 2,276, inclusive

REISSUES

SEPTEMBER 30, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,408

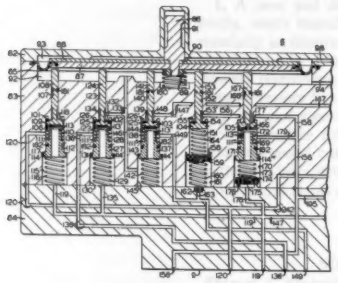
BRAKE APPARATUS WITH A COMBINED BRAKE CYLINDER AND RESERVOIR

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Original No. 4,058,348, dated Nov 15, 1977, Ser. No. 774,241, Mar. 4, 1977. Application for reissue May 14, 1979, Ser. No. 38,591

Int. Cl.[2] B60T *15/22*

U.S. Cl. 303—35 **33 Claims**



1. A fluid pressure brake apparatus for controlling braking of a vehicle, said brake apparatus comprising:

(a) brake pipe normally charged to a chosen pressure,

(b) braking means having:

(i) a pair of fluid motors of unequal size, each having therein a movable abutment operatively connected to the movable abutment in the other fluid motor, said abutments being operative [co-jointly] *jointly* to effect a brake application to a degree in accordance with the sum of two differential fluid pressure forces acting in the same direction on *one and the other of* the respective corresponding sides of said abutments,

(ii) [a] one-way flow valve [carried by the movable abutment of the larger fluid motor to enable] *means for enabling* flow of fluid under pressure from a first fluid pressure storage reservoir provided in said larger fluid motor at *said* one side of the larger abutment to a second fluid pressure storage reservoir at [the] *said* other side of said larger abutment, and

(iii) biasing means acting on said one side of said larger abutment and effective to normally bias both of said abutments to a brake release position, and

(c) a brake control valve device having valve means operable in response to charging said brake pipe to said certain chosen pressure to effect the supply of fluid under pressure from said brake pipe to said first and second storage reservoirs [and to one side of the smaller abutment] and the release of fluid under pressure from [the] *said* other side [thereof] *of the smaller abutment*, said valve means being operable in response to a reduction of the pressure in said brake pipe from said chosen pressure to [simultaneously] cause the [release of fluid under pressure from said one side of said smaller abutment, and the] *supply of fluid under pressure from said second storage reservoir to said other side of said smaller abutment and* release of fluid under pressure from said first fluid pressure storage reservoir at said one side of said larger abutment to reduce the pressure therein to a degree corresponding to the degree of reduction of the pressure in said brake pipe whereby fluid under pressure acting on the respective other side of said pair of tandem-arranged abutments establish a fluid pressure braking force corresponding to the sum of the respective differential fluid pressure forces acting on said respective other sides of said pair of tandem-arranged abutments.

Re. 30,409

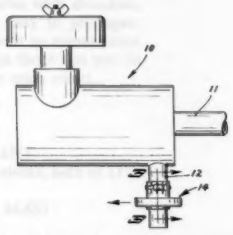
POWERED CONTAMINANT EVACUATOR

Lewis A. Borsheim, 504 - 31st Ave. North, Fargo, N. Dak. 58102

Original No. 4,097,256, dated Jun. 27, 1978, Ser. No. 798,857, May 20, 1977. Application for reissue Dec. 22, 1978, Ser. No. 972,417

Int. Cl.[2] B01D *41/00*

U.S. Cl. 55—429 **11 Claims**



1. A positive discharge evacuating apparatus, having in combination

a housing,

receiving means within said housing, including,

an annular chamber having an outlet,

a passage within said housing about said chamber having an outlet,

a discharge passage within said housing about said last mentioned passage having a discharge outlet,

said outlet of said first mentioned passage and of said chamber being misaligned circumferentially,

discharge means carried by said housing cooperating with and being complementary to said receiving means comprising,

an impeller,

driving means carried by said housing driving said impeller,

[a hub portion of] *means carried by* said impeller being disposed into said chamber,

said [hub portion having a pair of oppositely disposed discharge chutes which alternately] *means* provide communication between said chamber and said discharge passage,

vanes carried by said impeller upstanding therefrom disposed in said first mentioned passage,

a plurality of vanes carried by said impeller upstanding therefrom disposed in said discharge passage,

a pair of opposed spaced pairs of said vanes in said first mentioned passage define pockets respectively alternately in register with said outlet of said chamber, and

[said] *the* other vanes of said [other] *first* mentioned passage and said vanes of said discharge passage obstructing communication between said outlet of said chamber and said outlet of said discharge passage when [one of] said [discharge chutes of said chamber] *means* communicates with said discharge passage.

PLANT PATENTS

GRANTED SEPTEMBER 30, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,596

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jun. 5, 1979, Ser. No. 44,413

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—4 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, much branched, semi-climbing, or trailing habit, substantially as illustrated and described, characterized by buds and flowers of a medium orange-yellow color, the buds and flowers resembling Magic Wand in size and shape with the present variety having more petals; and further characterized by a plant of vigorous compact growth habit with abundant, almost fern-like foliage, said plant being easy to propagate from soft wood cuttings or by budding, with an ambundance of flowers born usually in small clusters on shoot tips and on short lateral stems arising along the longer main stems.

4,597

MINIATURE ROSE PLANT

Earnest A. Meredith, and Margaret E. Rovinski, both of 12757 Barrett La., Santa Ana, Calif. 92705

Filed Jun. 8, 1979, Ser. No. 46,853

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant, of hardy, dwarf, erect, well branched habit; substantially as illustrated and described herein; characterized by a flower basically white with a distinct red border or edging; further characterized by its bush — dwarf, erect, well branched, easy to propagate from cuttings or by budding; an abundance of flowers, borne singly or in loose clusters.

4,598

ROSE PLANT

F. Harmon Saville, 58 Hammond St., Rowley, Mass. 01969

Filed Jun. 18, 1979, Ser. No. 49,421

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by beautiful unusual salmon and carrot red blooms borne primarily singly to a stem.

PLANT PATENTS

GRANTED SEPTEMBER 30, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawings.

4,226

MINIATURE ROSE PLANT

Helen S. Moore, 2515 E. Myrtle Ave., Visalia, Calif. 93277

Filed June 1, 1978, Ser. No. 911,422

Int. Cl.² A01H 5/00

U.S. Cl. PP.—4 1 Claim

A new and distinct variety of miniature rose plant of bushy, multi-branched, semi-climbing, or trailing habit, profusely re-blooming and short-jointed, characterized by black and flowers of a medium orange-yellow color, the buds and flowers remaining single. Wand is one and three with the present variety having more petals and further characterized by a plant of vigorous compact growth habit with dominant short jointed stems, said plant being easy to propagate from soft wood cuttings or by budding, with an attractive of flowers from middle to small clusters on stems one and the other lateral stems having the longer petal stems

4,227

MINIATURE ROSE PLANT

Everett A. Sylvestri, and Clarence E. Jones, both of 11787

Parent Ave., Santa Ana, Calif. 92705

Filed Dec. 1, 1978, Ser. No. 964,833

Int. Cl.² A01H 5/00

U.S. Cl. PP.—7 1 Claim

A new and distinct variety of [illegible] rose plant, of [illegible] and [illegible] habit, [illegible] and [illegible] [illegible] and [illegible] [illegible] [illegible]

PATENTS

GRANTED SEP. 30, 1980

ERRATA

For CLASS	See PATENT NO.
368–185	4,224,789
440–073	4,224,893
260–144	4,225,432
568–397	4,225,513
568–447	4,225,514
568–444	4,225,515
568–041	4,225,516
568–487	4,225,517
568–937	4,225,518
562–506	4,225,694
370–001	4,225,752
370–004	4,225,753
260–406	4,225,787
260–408	4,225,788
455–073	4,225,821
455–108	4,225,822
455–226	4,225,823
340–146.3 AG	4,225,885
362–301	4,225,923

PATENTS

GRANTED SEPTEMBER 30, 1980

GENERAL AND MECHANICAL

4,224,692

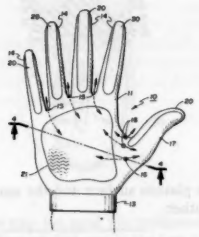
FREIGHT HANDLING GLOVE

Darrell W. Sundberg, Roseville, Minn., assignor to Sundberg Corporation, Roseville, Minn.

Filed Jun. 1, 1978, Ser. No. 911,531

Int. Cl.[2] A41D *19/00*

U.S. Cl. 2—161 R **4 Claims**



1. A multilayer work glove comprising:

(a) an interior fabric lining which directly contacts and encompasses the hand of a wearer including the fingers, thumb and wrist upon insertion therein, said lining having front and back portions joined by side seams;

(b) an exterior surface layer of plastic material having work-engaging surfaces bondingly secured to, and enveloping, said interior fabric lining;

(c) and a plurality of vent holes formed through said interior fabric lining and said exterior surface layer of plastic material, said exterior surface layer extending around the interior of said plurality of vent holes, said vent holes disposed at web locations between the fingers and thumb of the hand outside of said work engaging surfaces.

4,224,693

HOSIERY PRODUCT

Nicholas Wehrmann, and Charlie L. Williams, both of Wilkesboro, N.C., assignors to Ithaca Textiles, Inc., Wilkesboro, N.C.

Division of Ser. No. 914,588, Jun. 12, 1978, Pat. No. 4,186,471.

This application Feb. 23, 1979, Ser. No. 14,686

The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.

Int. Cl.[2] A41B *11/02*; D04B *7/16*

U.S. Cl. 2—241 **13 Claims**

1. A circular sheer nylon hosiery product having the appearance when worn of an overall substantial uniformity in color and sheerness in its leg, foot and toe portions together with reinforcement properties in the toe portion thereof, said hosiery product comprising:

(a) a sheer leg and foot portion knitted from a textured relatively dull, nylon yarn of a selected weight; and

(b) a sheer closed toe portion knitted from a strand heat cured, substantially non-textured relatively bright nylon yarn of a selected weight sufficiently heavier than the weight of said leg and foot yarn to provide corresponding reinforcement and dye properties in said toe portion and in the hosiery product as worn both a reinforced toe portion and an overall appearance when post-knit dyed of substantial uniformity in color and sheerness throughout said leg, foot and toe portions.

4,224,694

ACCESSORY SUPPORT MEMBER FOR A HELMET

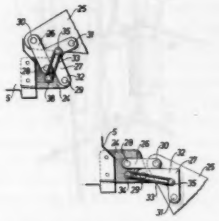
Tore G. Palmaer, Kvarnliden, S-330 30 Gnosjö, Sweden

Filed Jun. 19, 1978, Ser. No. 916,530

Claims priority, application Sweden, Jul. 1, 1977, 7707661

Int. Cl.[2] A61F *11/02*; A42B *3/00*

U.S. Cl. 2—422 **4 Claims**



1. A connecting arrangement for linking a helmet accessory such as a visor, with helmet attachment means, said arrangement comprising a support plate and means to facilitate its attachment to the helmet attachment means; a link mechanism comprising two independent arms, one of said arms being a straight arm and being pivotally connected at one end to said support plate and at its other end to the helmet accessory, the other of said arms being L-shaped having a short and long leg with the end of the longer leg connected to the support plate and the end of the shorter plate connected to the helmet accessory, said link arms being movable between first and second distinct positions corresponding to a raised and a lowered position of the helmet accessory, the connection of said arms being disposed as such that the first arm and the longer leg of said second arm lie parallel to each other and abut each other in said first and second position to thereby limit the said first and second positions.

4,224,695

ENDOPROSTHETIC ELBOW JOINTS

Hans Grundei; Joachim Henssge, and Gerhard Schütt, all of Lübeck, Fed. Rep. of Germany, assignors to Schütt & Grundei GmbH, Lübeck, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 15,966

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1978, 2811331

Int. Cl.[3] A61F *1/03*

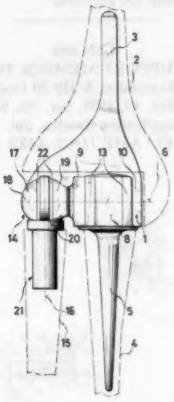
U.S. Cl. 3—1.91 **7 Claims**

1. In an elbow joint in the form of an endoprosthesis having at least one hinge joint provided with anchoring shanks of which one is to be connected to the humerus and the other is to be connected to the ulna of a patient, and a hinge pin which connects the shanks together and defines the axis thereof, the hinge joint having a central mounting bore extending through its mounting parts for receiving said hinge pin, the axis of the

hinge joint taking the place of the flexing and extending axis of the natural arm, the improvement which comprises

a rotary humeroradial joint connected to the hinge joint on the side thereof on which the patient's radius is situated, said rotary humeroradial joint being connected on its hinge side to the humeral section of the hinge joint and being provided with a spigot-like connecting member, on the side thereof adjacent the patient's radius, and a sleeve to be anchored in the radius and rotatably mounted therein with respect to said connecting member for engaging the latter and thereby transmitting forces from the radius to said rotary humeroradial joint,

said rotary humeroradial joint having in its mating region, at



least on the side adjacent the radius, a spherical surface which covers the angular range of flexible movement of the patient's natural arm, and the upper end of said radius sleeve being provided with a joint cavity, the surface of which slides on said spherical surface as a mating surface, whereby said rotary humeroradial joint has at least two degrees of freedom, one of which allows pivoting movement of said rotary humeroradial joint by a radius shank thereof about the flexing and extending axis of the hinge joint, and of which the other allows rotary movement by said radius shank about the longitudinal axis of the patient's radius, and a further degree of freedom which allows axial movement by said radius shank along the longitudinal axis of the patient's radius.

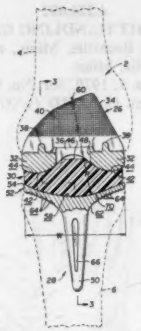
4,224,696

PROSTHETIC KNEE

Ian Murray, Bellevue, Wash., and Stanley Kampner, San Francisco, Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Sep. 8, 1978, Ser. No. 940,525
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.911 **20 Claims**

1. A prosthetic knee for implantation in a body comprising a femoral implant for connection to a femur defining a pair of spaced apart, convexly curved condyle sections; a meniscal plate having a pair of spaced apart, concavely curved bearing surfaces for cooperation with the condyle surfaces and permitting the latter to move relative to the former in a knee flexionextension plane; and a tibial implant for connection to the patient's tibia, the tibial implant including a plateau facing towards the femoral implant and having a concave, compoundly curved plateau surface; the meniscal plate further including a convex undersurface shaped complementarily to the plateau surface, the plateau surface and the undersurface having a shape permitting a substantially unrestrained relative sliding motion between the plateau surface and the undersur-



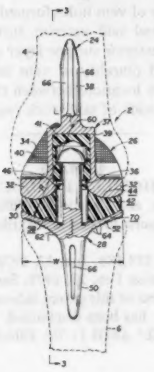
face when the plateau surface and the undersurface are biased against each other.

4,224,697

CONSTRAINED PROSTHETIC KNEE

Ian Murray, Bellevue, Wash., and Stanley Kampner, San Francisco, Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Sep. 8, 1978, Ser. No. 940,526
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.911 **52 Claims**



1. A constrained prosthetic knee for implantation in a body comprising a femoral implant for connection to a femur defining a pair of spaced apart, convexly curved condyle sections; a meniscal plate having a pair of spaced apart, concavely curved bearing surfaces for cooperation with the condyle surfaces and permitting the latter to flex and extend relative to the former in a knee flexion-extension plane through a predetermined flexion-extension arc; a tibial implant for connection to the patient's tibia, the tibial implant including a plateau facing towards the femoral implant and having a concave, compoundly curved plateau surface; the meniscal plate further including a convex undersurface shaped complementarily to the plateau surface, the plateau surface and the undersurface having a shape permitting a substantially unrestrained relative sliding motion between the plateau surface and the undersurface when the plateau surface and the undersurface are biased against each other; and constraint means connected with the femoral implant and the tibial implant for preventing the separation of

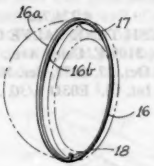
the implants and the meniscal plate, the constraint means permitting substantially unrestrained movement between the femoral implant and the meniscal plate in the flexion-extension plane over said arc and limiting the extent of relative sliding motions between the undersurface and the plateau surface.

4,224,698

ACETABULAR CUP FOR TOTAL HIP REPLACEMENTS

Clark N. Hopson, 3738 Broadview Dr., Cincinnati, Ohio 45208

Filed Apr. 5, 1979, Ser. No. 27,489
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.912 **3 Claims**



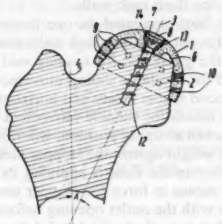
1. In an acetabular cup for total hip replacement, having a locating hole in the face of said cup at the top; a radiographic marker system making possible the determination from an anterior-posterior radiographic view of the hip whether the cup is facing anteriorly or posteriorly, comprising a radiographically impervious element along one half of the open periphery of said cup beginning opposite said locating hole, and a radiographically impervious element along the other one half of the periphery of said cup, the configuration of the impervious elements along the two halves of the open periphery of said cup being different, allowing differentiation by X-ray of the anterior and posterior halves of the cup.

4,224,699

CAP-SHAPED ENDOPROSTHESIS FOR A FEMORAL HEAD

Bernhard G. Weber, St. Gall, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 23, 1978, Ser. No. 908,699
Claims priority, application Switzerland, May 23, 1977, 6309/77
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.913 **5 Claims**



1. A cap-shaped endoprosthesis for a femoral head, said endoprosthesis comprising:

a cap-shaped hemispherical shell of bioceramic material defining a cavity for fitting over a femoral head, said shell having a bore extending centrally therethrough and a plurality of apertures distributed about a peripheral edge thereof for an invasion of tissue therein;

a metal anchoring pin extending through said bore for anchoring said shell to a femoral head, said pin and said shell defining a shaped gap therebetween with narrowing sections at each end of said gap; and

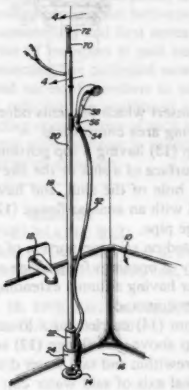
a plastic member disposed between said pin and said shell to maintain said pin and said shell out of contact with each other, said plastic member filling said gap and having thin-walled extensions in said narrowing sections.

4,224,700

WATER CONSERVATION SHOWER

Billy G. Bloys, Rte. 1, Plainview, Tex. 79072

Filed Sep. 5, 1979, Ser. No. 72,619
Int. Cl.³ A47K 3/22; E03C 1/06
U.S. Cl. 4—603 **8 Claims**



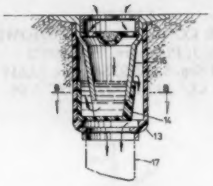
1. A recirculatory shower for a water sump including a generally horizontal bottom and having a drain outlet opening upwardly through the bottom an upright standard, a stopper structure carried by the lower end of said standard for downward removable reception in and plugging said drain outlet opening, the upper end of said standard including an upper end terminal for engaging a downwardly facing surface, a water pump assembly including a water inlet and a water outlet and supported from the lower end of said standard above said stopper structure with said water inlet structure spaced closely above said stopper structure, and a shower head structure for support in elevated position relative to said stopper structure and including an inlet with which said water pump outlet is communicated.

4,224,701

PEST AND ODOR PREVENTIVE SANITARY DRAINER

Ching-Piao Huang, No. 1, Tung-Ming St., Hsin Chu, Taiwan

Filed Oct. 4, 1978, Ser. No. 948,488
Int. Cl.[3] E03C *1/26*
U.S. Cl. 4—206 3 Claims



1. A drain insert which prevents odor and pests from entering with a living area comprising:

a water cup (13) having a top portion countersunk below a bottom surface of a sink or the like and disposed within a drainage hole of the sink, and having a bottom portion provided with an annular flange (12) for connection with a drainage pipe,

a cover nested on said top portion of said water cup having a plurality of openings for passage of water therethrough, said cover having a funnel extending downwardly within said water cup, and

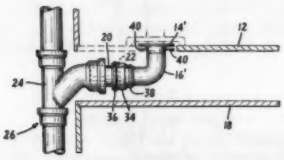
a water drum (14) carried on a lower rim portion of said water cup above said flange (12) so that said funnel extends therewithin and said water drum is offset relative to longitudinal axis of said water cup whereby water from the sink is funneled into said water drum which when overfilled passes into the drain pipe over said water drum.

4,224,702

PLUMBING APPARATUS

John Bretone, Jr., 91 Woodview Rd., West Hempstead, N.Y. 11512

Division of Ser. No. 679,780, Apr. 23, 1976, Pat. No. 4,155,572, which is a division of Ser. No. 610,863, Sep. 5, 1975, Pat. No. 4,038,737. This application May 26, 1977, Ser. No. 800,957
Int. Cl.[3] E03D *11/16*; F16L *21/00, 55/00*
U.S. Cl. 4—252 R 5 Claims



1. A plumbing assembly for connecting a soil stack to a toilet supported on a floor, comprising:

a ferrule structure extending outwardly from the soil stack, the free end of said ferrule structure having a bead extending generally circumferentally about said free end of said ferrule structure;

a discharge pipe having one end adjacent said free end of said ferrule structure, the other end of said discharge pipe extending through the floor and having first connecting means for connecting said discharge pipe to the toilet;

a compressible sleeve extending over said free end of said ferrule structure and said one end of said discharge pipe so as to form a flexible coupling between said discharge pipe and said ferrule structure;

first clamp means extending circumferentially about said sleeve for compressing said sleeve about said discharge pipe and for sealing said sleeve to said discharge pipe;

second clamp means extending circumferentially about said sleeve for compressing said sleeve about said ferrule structure and for sealing said sleeve to said ferrule structure; and

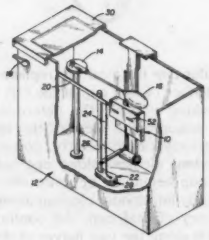
second connecting means formed integrally with said discharge pipe and projecting outwardly therefrom into the floor for directly securing said discharge pipe to the floor so that said discharge pipe is supported primarily by the floor.

4,224,703

FLUSH TANK VALVE CLOSER

Walter Makhobey, 3109 E. Caley Ave., Littleton, Colo. 80121

Filed Oct. 17, 1977, Ser. No. 842,547
Int. Cl.[2] E03D *1/30, 3/12*
U.S. Cl. 4—324 12 Claims



1. A flush valve closer for use in a toilet flush tank having a water outlet opening and valve stopper means seatable in the opening when the toilet is not being flushed, the stopper means being raisable from the opening to initiate a flush and allow water to exit the tank through the opening, the stopper being automatically lowerable to seal the opening in response to a predetermined lowered closing level of water in the tank, comprising:

(a) a stationary float guide rod having means for attachment to the flush tank wall at the upper end thereof, first spacer means near the upper end of the rod and second spacer means near the lower end of the rod for maintaining the intermediate portion of the rod at a predetermined distance from the flush tank wall;

(b) a buoyant float elongated on one horizontal dimension mounted adjacent said flush tank wall on said intermediate portion of the guide rod for spacing said float from said stopper and for available sliding movement between said first and second spacer means and horizontally offset from the stopper means for slidable movement with respect to the rod between an upper position, wherein the float is not applying its weight against the stopper means, and a lower position, wherein the float is applying its weight against the stopper means to force the stopper means into sealing relationship with the outlet opening before the water falls to said predetermined closing level during a flush; and

(c) actuator means extending outwardly from said float for transmitting the weight of the float against the stopper means when the float is in said lower position.

4,224,704

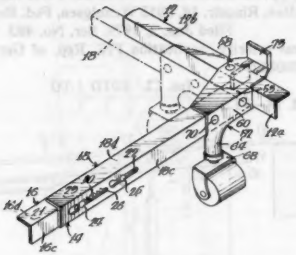
ADJUSTABLE AND FOLDABLE BED FRAME

Richard A. Nowell, Carlsbad, Calif., assignor to Harris-Hub Co., Inc., Harvey, Ill.

Filed Oct. 30, 1978, Ser. No. 956,186
Int. Cl.[2] A47C *19/00*
U.S. Cl. 5—181 17 Claims

1. An adjustable bed frame for supporting mattress means in spaced relationship to a floor, comprising: a pair of spaced,

parallel, horizontally disposed side rails, a pair of spaced, parallel, horizontally disposed end rails extending substantially transversely between said side rails for holding said side rails in spaced, parallel relationship, each end rail including first and second elongated elements each having at least one wall with an outer surface and an inner surface, said first element having a first end mounted to one of said side rails and said second element having a first end mounted to one end of the other of said side rails, each of said elements having a second end disposed in slidable relationship to one another along the axis of said elements with the outer surface of the wall of said first element facing and engaging the inner surface of the wall of said second element, at least one protrusion extending outwardly from the outer surface of the wall of said first element, means defining at least one elongated opening in the wall of said second element permitting said protrusion to be inserted when said first and second elements are positioned in engagement with one another, said opening having an edge defining a plurality of teeth extending along the axis of said second element, spring loaded pawl means secured to said first element and receivable in said opening to engage said teeth one at a time, said teeth facing in a direction such that said pawl is free to ride over said teeth when said first and second elements are moved inwardly toward one another, engagement between said pawl and one of said teeth preventing said first and second elements from moving outwardly relative to one another, each protrusion comprising a rivet having a head portion and a shank portion, said elongated opening having an enlarged diameter portion through which the head portion of the rivet is receivable, and an elongated narrow portion of predetermined transverse width which is greater than the diameter of the shank portion of the rivet and less than the diameter of the head portion of the rivet, whereby said first and second elements are positively held against separation.

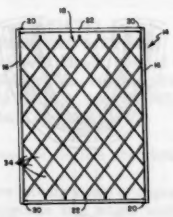


4,224,705

ADJUSTABLE WATERBED MATTRESS SUPPORT

Philip J. Santo, 100 Fernwood Ave., Rochester, N.Y. 14621

Filed Aug. 25, 1978, Ser. No. 936,761
Int. Cl.² A47C 27/08
U.S. Cl. 5—400 **4 Claims**



1. Adjustable waterbed mattress support for accomodating a waterbed mattress of any of a variety of sizes, said adjustable support comprising:

a pair of spaced apart side rails upstanding along respective marginal edges thereof; and

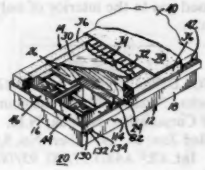
accordion-type load bearing means, collapsible in the non-load bearing direction, for adjustably interconnecting said side rails, said load bearing means including a first series of elongated substantially serpentine members upstanding along respective marginal edges thereof, a second series of elongated substantially serpentine members upstanding along respective marginal edges thereof, said second series of members being oriented relative to said first series of members to have spaced contact points therewith and to be collapsible toward one another between said contact points, means for connecting said first series of members to said second series of members at said contact points, and means for connecting the outboard most member of said first and second series of members to said side rails, whereby said side rails may be positioned a desired distance apart, depending upon the size of such mattress to be supported while any such mattress is supported by said first and second series of members.

4,224,706

PNEUMATIC BED

Gary A. Young, LaMoure, N. Dak., and Emil S. Swenson, Coon Rapids, Minn., assignors to Dial-A-Firm, Inc., LaMoure, N. Dak.

Filed Oct. 16, 1978, Ser. No. 951,595
Int. Cl.² A47C 27/08
U.S. Cl. 5—449 **34 Claims**



1. A bed assembly comprising:

an air mattress for supporting a human body, said air mattress having an overall firmness determined by the quantity of air in said air mattress and a port for admitting and releasing air to and from said air mattress;

means for supporting said air mattress above a surface; and

means for adjusting the overall firmness of said air mattress by adjusting the amount of air in said air mattress;

said adjusting means including at least one chamber defining a variable internal volume for containing a variable quantity of air, conduit means for connecting said chamber with the port of said air mattress for fluid communication between said chamber and said air mattress, and means for changing and for maintaining a particular volume of said chamber to change the pressure within said chamber and within said air mattress thereby altering and maintaining the overall firmness of said air mattress.

4,224,707

FLOATING APPARATUS FOR THE REMOTE MARKING OF THE POSITION OF BODIES FALLEN IN WATER

Giulio Mariani, Via Paola Falconieri, 45, 00152 Roma, Italy

Filed Feb. 21, 1978, Ser. No. 880,170
Claims priority, application Italy, Feb. 21, 1977, 48144 A/77
Int. Cl.² B63C 9/18
U.S. Cl. 9—8 R **1 Claim**

1. Apparatus for improving safety at sea, comprising a buoyant body, ballast means on the underside of the buoyant body

to maintain the buoyant body in an upright attitude in the water, an inflatable standard carried by the buoyant body in a position such that when inflated the standard is erect and rises a substantial distance above the surface of the water, signal means at the upper end of the standard, the standard being hollow and comprising an outer wall and at least one inner

wall disposed within the outer wall, the inner and outer walls defining between them at least one hollow chamber that extends continuously full length of the standard parallel to the length of the standard, and means carried by the apparatus to supply compressed gas to the interior of only said at least one hollow chamber.

4,224,708

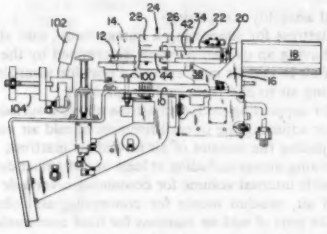
UPPER MOLDING AND FLANGING MACHINE

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Jan. 24, 1979, Ser. No. 5,934

Int. Cl.[2] A43D *21/00, 95/00*

U.S. Cl. 12—8.2 **2 Claims**



1. An upper molding and flanging machine comprising: a male mold; a female mold mounted for forward-rearward movement towards and away from the male mold, the female mold having a back part and side parts extending forwardly of the back part and mounted for inward-outward movement with respect to the back part; a pair of wipers having bases hinged to each other for swinging movement about a vertex and legs extending and divergently of the bases, the wiper bases being mounted to the back part and the wiper legs being mounted to the side parts; means for initially maintaining the female mold in a rearward position spaced from the male mold with the side parts and the wiper legs in outer positions; and means for thereafter imparting forward translatory movement to the female mold to cause the back part to press the back end of an upper mounted on the male mold against the back end of the male mold, said pressing of the back end of the upper against the back end of the male mold terminating said forward translatory movement, and for then causing the side parts to move inwardly and press side portions of the upper against the sides of the male mold; characterized in that the machine comprises: means mounting the wiper bases to the back part for forward-rearward movement; means for initially retaining the wiper bases in a rearward position relative to the back part; and means effective after the termination of the forward translatory movement of the female mold for moving the wiper bases forwardly with respect to the back part, the mounting of the wiper legs to the side parts being so constructed and arranged as to cause inward movement of the wiper legs about the vertex in response to said forward movement of the wiper bases.

4,224,709

TRANSLOADING BRIDGE FOR RAMPS

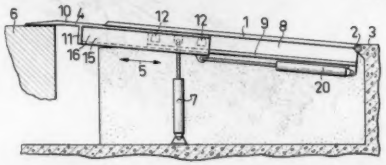
Kurt Alten, Ringstr. 14, 3015 Wennigsen, Fed. Rep. of Germany

Filed Jan. 2, 1979, Ser. No. 483

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1978, 2800127

Int. Cl.[2] E01D *1/00*

U.S. Cl. 14—71.3 **14 Claims**



1. A transloading bridge for ramps which includes: a bridge plate having a rear end adapted to be pivotally connected to a ramp, said bridge plate also having a front end provided with an extension arranged underneath said bridge plate and movable from a retracted position at least partially outwardly from underneath said bridge plate into an advanced position for resting on a platform, said extension also being movable from said advanced position to said retracted position, said extension being provided with longitudinal slots therethrough extending in the longitudinal direction of said bridge, and first web means connected to said bridge plate and extending through said longitudinal slots while forming reinforcements for said bridge plate, said web means being provided with lateral projections respectively having a supporting surface slidably supporting said extension in close proximity to said bridge plate.

4,224,710

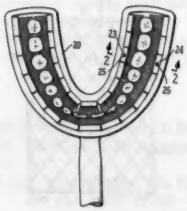
TOOTHBRUSH FOR THE WHOLE MOUTH

Terry S. Solow, 410 Playa Blvd., La Selva Beach, Calif. 95076

Filed Nov. 30, 1978, Ser. No. 965,055

Int. Cl.[3] A46B *13/02*

U.S. Cl. 15—22 R **13 Claims**



1. A toothbrush for brushing both sides of a tooth simultaneously comprising in combination:

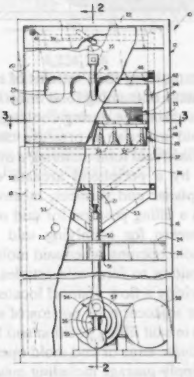
a. a housing of arcuate sectional shape fitting over a row of teeth,
b. a pair of individual brushes mounted within said housing;
c. said brushes being spaced from each other and adapted to contact opposite sides of a tooth and being individually movable with respect to said housing;
d. said brushes having bristles set at an acute angle to the sides of said tooth and being directed toward the sulcus;
e. means to move said brushes toward and away from each other, to clean the tooth including the sulcus area.

4,224,711

APPARATUS FOR CLEANING BRISTLED STRUCTURES

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., South Windsor, Conn.

Filed May 17, 1979, Ser. No. 39,771
Int. Cl.³ A46B *17/06*
U.S. Cl. 15—89 **15 Claims**



1. Apparatus for cleaning a bristled structure to remove foreign material lodged between the bristles thereof, said apparatus comprising means for alternately accelerating the bristled structure to elevated speed in one and an opposite direction generally parallel to the direction of bristle extent, including means for supporting the bristled structure and accelerating it in said one direction and means defining one abutment in the path of the bristled structure travel in said one direction for abruptly halting the travel of the bristled structure while it is travelling at elevated speed in said one direction and fo accelerating the bristled structure in said opposite direction, and means defining another abutment in the path of bristled structure travel in said opposite direction for abruptly halti travel of the bristled structure while it is travelling at elevated speed in said opposite direction, said supporting means being movable in said opposite direction toward said other abutment defining means and to a position in said opposite direction beyond said other abutment defining means.

4,224,712

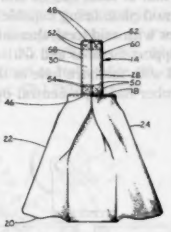
TOWEL AND METHOD

Henry C. Black, and Ella J. Black, both of Cleveland, Tex., assignors to Sweat Buddy, Inc., Houston, Tex.

Filed May 19, 1978, Ser. No. 907,759
Int. Cl.³ A47K *10/02*
U.S. Cl. 15—209 R **14 Claims**

8. A towel comprised of flexible absorbent sheet material and including:

a main body member having a pair of opposite end portions and a pair of opposite side edges extending generally transversely to said end portions, the sheet material of said main body member being folded upon itself in a single box pleat to form an uninterrupted forward face and to position each of said side edges generally adjacent to and rearwardly of a respective one of the lateral extremities of said forward face, said sheet material of said main body member further being secured upon itself in said folded



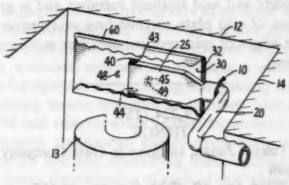
configuration adjacent one of said end portions; and a tab assembly integrally extending from said one end portion and comprising a plurality of tab members disposed in overlying relationship to one another and secured to one another.

4,224,713

APPLICATOR FOR PAINTS AND THE LIKE

Marilyn Y. Trent, P.O. Box 5, Clayton, Calif. 94517

Filed Jan. 11, 1979, Ser. No. 2,655
Int. Cl.³ B05C *1/06*
U.S. Cl. 15—210 R **1 Claim**



1. A device for applying materials to walls with limited surface clearance comprising:

a Z-shaped handle with a thin, flat adaptor at its distal end,
a thin, flat, generally rectangular backing plate,
two pairs of grommets carried by said backing plate,
said adaptor having a hole extending through its distal end, and
pin means removably extending through a pair of said grommets and said hole to connect said adaptor to said backing plate such that said flat adaptor rotates about said pin means and may lie against said backing plate to reduce the overall thickness of the device to a minimum, and such that said pin means may be removed from one pair of grommets, said backing plate may be rotated and said pin means may be inserted into said second pair of grommets to change the size of the path covered by said backing plate.

4,224,714

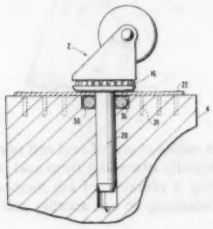
CASTER ASSEMBLY

Andrew G. Seipos, Miami, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed May 17, 1979, Ser. No. 39,970
Int. Cl.² B60B *33/00*
U.S. Cl. 16—29 **16 Claims**

1. A retaining system for attaching to a support member a leg member mounted on an elongated member, the support member having a bore hole therein for receiving the elongated

member, said system comprising: a planar metal plate having an opening and a first plurality of slender elongated nail-like teeth struck therefrom to project outwardly from a side face of said plate and leaving a second plurality of corresponding slots in said plate such that at least one of said teeth extends from each of said slots, said plate being capable of being secured to the support member with said teeth thereof being embedded in one side of such support member and with said opening of said plate being aligned with the bore hole in the support member; and a resilient member having a central opening therein with



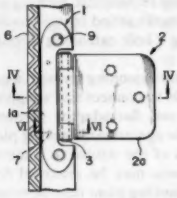
inner dimensions less than the smallest dimension of said opening in said plate, said resilient member being adapted to be positioned between said plate and the support member with the central axis of said resilient member being in alignment with the central axes of said opening in said plate and the bore hole, whereby when the elongated member is attached to the support member, the elongated member passes through said openings in said plate and said resilient member and is gripped by both the edges of said plate surrounding said opening in said plate and the edges of said resilient member surrounding said central opening.

4,224,715

HINGE

Kazuo Iseki, Tokyo, Japan, assignor to Ohta Company Limited, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,650
Claims priority, application Japan, Feb. 8, 1979, 54-1534154
Int. Cl.[2] E05D *5/06*
U.S. Cl. 16—135 **5 Claims**



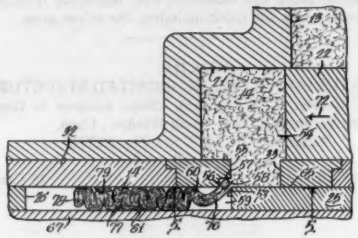
1. In a hinge in which at least one of its members has a bent pivotable portion with respect to a base portion, the improvement comprising an auxiliary hinge member larger than said base portion of said bent pivotable portion and arranged to be mounted between the surface of a pillar and said base portion of said bent pivotable portion in overlapped relation with said base portion of said bent pivotable portion, at least one portion of one of the mating surfaces of said base portion of said bent pivotable portion and of said auxiliary hinge member being convex and at least one portion of the other of the mating surfaces being concave for proper positioning of said base portion of said bent pivotable portion on said auxiliary hinge member.

4,224,716

MOLDING DEVICE

Richard C. Wagner, Frankfort, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Apr. 13, 1979, Ser. No. 29,721
Int. Cl.[3] A22C *7/00*
U.S. Cl. 17—32 **13 Claims**



1. A device for molding food articles of raw finely divided beef and similar tissue containing food material that is normally subject to uneven shrinkage during cooking, comprising: supply means for said material; a pressure chamber means for providing pressurized said food material; a mold having a mold opening defined by a peripheral arcuate edge surface and spaced opposite planar end surfaces; means for moving said mold to and from a filling position for said mold opening; and supply passage means for supplying said pressurized food material to said mold opening when said mold and opening are in mold filling position to form said articles, said supply passage means comprising a flow channel located above the mold plate and above an adjacent edge portion of said mold opening when said mold is in said filling position and having an arcuate exit end at said arcuate edge of said mold opening, said arcuate exit end of said supply passage including means for projecting said food material directly into said mold opening in a thin ribbon of a thickness that is a fraction of the spacing between said mold opening end surfaces, said thin ribbon during said projecting being at an obtuse angle to an adjacent one of said planar end surfaces that defines, with said arcuate edge surface, said mold opening.

4,224,717

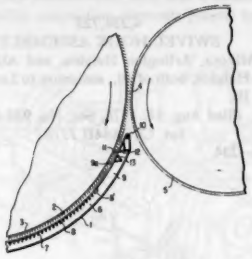
CYLINDER SCREEN FOR A CARD

Paul Teichmann; Wolfgang Beneke; Heinrich Cremer, all of München-Gladbach, Fed. Rep. of Germany, and Guy Ludwig, Mulhouse, France, assignors to Trützschler GmbH & Co. KG, München-Gladbach, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,309
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745474
Int. Cl.[2] D01G *15/34*
U.S. Cl. 19—98 **6 Claims**

1. In a cylinder screen of a carding machine which has a card cylinder and a doffer cooperating with the card cylinder; the cylinder screen being situated underneath the card cylinder and generally conforming to the surface curvature thereof; the cylinder screen having a width dimension extending parallel to the cylinder axis, a screen face including a screening portion and a screenless terminal portion adjoining the screening portion along a boundary and having an outer end spaced from said boundary; the terminal portion being arranged adjacent the doffer; the improvement comprising means defining a slot-shaped opening provided in said screenless terminal por-

tion and having a length dimension oriented parallel to the width dimension of said cylinder screen; the distance of said



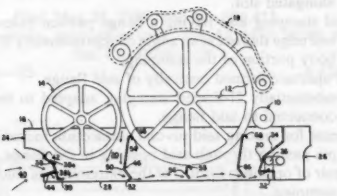
slot-shaped opening from said outer end being smaller than from said boundary.

4,224,718

PNEUMATIC CLEANING OF THE CHAMBER CARDING ELEMENTS OF A TEXTILE MACHINE

Harry H. Hicks, Winston-Salem, N.C., assignor to Industrial Air, Inc., Greensboro, N.C.

Filed Nov. 20, 1978, Ser. No. 961,936
Int. Cl.² D01G *15/82*
U.S. Cl. 19—107 **4 Claims**



1. In a textile carding machine of the type having such carding elements as a lickerin, main cylinder and doffer operatively mounted on a frame and walls covering the sides and ends of the frame between the top of said frame and the floor, an improved pneumatic waste removal apparatus for removing trash and waste which tends to accumulate beneath the carding machine, said apparatus comprising:

(a) a suction plenum positioned adjacent and beneath the lickerin end of said frame and having an intake orifice extending across the width of said frame providing communication between the interior of said plenum and the space enclosed by said side walls;

(b) a source of negative pressure connected to said suction plenum to induce air currents into said plenum from said space, said source of negative pressure being of such magnitude as to exert an air flow rate of at least 360 cfm through the intake orifice of said suction plenum;

(c) an inlet means through the wall covering the end of said frame opposite said suction plenum through which air is drawn by said suction plenum and conveyed across the floor of said space toward said suction plenum;

(d) a first baffle attached along the upper edge thereof to the end wall which contains said inlet and extending substantially across the width of said frame in confronting relation to said inlet, said baffle including an upper wall slanting slightly downwardly but mostly inwardly and a rear wall slanting slightly inwardly but mostly downwardly, and having a lower edge spaced from said floor a distance between two and four inches;

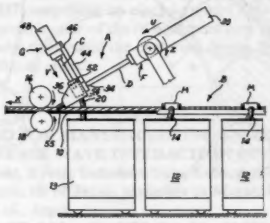
(e) whereby air entering from the outside through said inlet means is deflected downwardly toward said floor and caused to continuously sweep across the floor carrying lint and waste to said suction plenum where they are collected.

4,224,719

RESERVE FIBRE SLIVER FEEDING APPARATUS

Beatrice Bulla, Via La Campagna, Serocca d'Agno, Switzerland

Filed Mar. 23, 1979, Ser. No. 23,073
Claims priority, application Italy, Mar. 30, 1978, 21774 A/78
Int. Cl.² D01G *23/00*
U.S. Cl. 19—157 **14 Claims**



1. A sliver feeding arrangement for simultaneously feeding a plurality of moving active slivers to related textile machine means, comprising a plurality of first sources for providing a plurality of said active slivers, each of said first sources providing at least one active sliver, means for guiding each of said plurality of active slivers in their movement in predetermined paths so that said active slivers during at least a portion of said paths are moving generally parallel to each other, means for operatively engaging said active slivers as to draw said active slivers from said first sources, move said active slivers along said paths and feed said active slivers toward said textile machine means, a second source for providing a reserve sliver, guide means for operatively engaging and guiding said reserve sliver, restraining means effective to at times operatively engage and hold said reserve sliver against movement relative to said guide means, transporter means operatively supporting said guide means and said restraining means, detecting means effective to detect the existance of each of said plurality of said active slivers and being further effective to detect the occurrence of a break or run-out in any of said plurality of said active slivers, said transporter means being effective upon said detecting means detecting the occurrence of a said break or run-out to transport said guide means and said restraining means to a first position of close proximity to said predetermined paths as to thereby present a leading portion of said reserve sliver carried by said guide means to a trailing portion of the detected broken or run-out sliver, and said restraining means being effective upon being transported to said first position to release said reserve sliver and permit said reserve sliver to move relative to said guide means and with said trailing portion of the detected broken or run-out sliver.

4,224,720

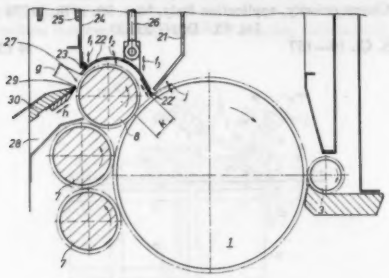
APPARATUS FOR THE OPENING-UP AND CLEANING OF COTTON WASTE

Friedrich W. Morgner, Bergisch Gladbach; Franz Höck, Overath, and Hans G. Stock, Cologne, all of Fed. Rep. of Germany, assignors to Temafa Textilmaschinenfabrik Meissner, Morgner & Co. GmbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,616
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1977, 2755380
Int. Cl.² D01B *1/00, 1/08*
U.S. Cl. 19—204 **27 Claims**

1. An apparatus for the opening and cleaning of cotton waste, especially strips, card fly, and scutcher material, which

includes: a rotatable saw tooth barrel, a fiber material draw-in roller for feeding the fiber material to be cleaned to said saw tooth barrel, said saw tooth barrel having a circumferential surface circumferential sections of which with said saw tooth barrel in condition of rotation successively forming a loosening-up section for loosening-up the fiber material received by said saw tooth barrel, said loosening-up section when viewing



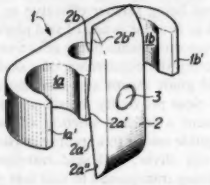
said saw tooth barrel in its direction of rotation being followed by a rotatable fiber material take-off roller rotatable in a direction counter to the direction of rotation of said saw tooth barrel, and conduit means having an inlet adjacent said circumferential surface of said fiber material take-off roller for receiving fiber material from the latter and having an outlet for connection to a fiber material collection container.

4,224,721

DEVICE FOR CLAMPING TWO GENERALLY PARALLEL DIRECTED MEMBERS

Kurt L. Ohlson, Moravägen 27, 161 42 Bromma, Sweden

Filed Mar. 22, 1978, Ser. No. 888,958
Claims priority, application Sweden, Mar. 28, 1977, 7703556
Int. Cl.² A44B *21/00*
U.S. Cl. 24—81 TH **8 Claims**



1. Device for clamping two generally parallel members, comprising:

first and second mutually cooperating parts;

the first part having at least two grooves, which grooves are aligned along longitudinal axes which axes are substantially parallel to one another, and each groove arranged to partially surround one of said generally parallel members; and,

the second part being rotatably attached to said first part, which second part rotates about an axis which is substantially perpendicular to said longitudinal axes in order to expose the grooves in a first position and, in a second position, to clamp the members, said second part being provided with plane surfaces which slide along the members and urge the members into the grooves as the second part is rotated from the first position to the second position, each of said grooves having an opening for receiving the corresponding one of the parallel members, said opening having a normal width narrower than a normal width of the groove.

4,224,722

SWIVEL HOOK ASSEMBLY

Daniel S. Mikosz, Arlington Heights, and Alfred J. LeMert, Prospect Heights, both of Ill., assignors to Ludwig Industries, Chicago, Ill.

Filed Aug. 14, 1978, Ser. No. 933,471
Int. Cl.² A44B *13/02*
U.S. Cl. 24—234 **2 Claims**

1. A swivel hook assembly comprising

a substantially flat elongated stamping,

said stamping being provided with a body portion with a vertical elongated slot therein for the reception of a strap adapted to be placed upon the torso of a person,

said stamping including a pair of apertures formed at each end thereof at a position spaced outwardly from said elongated slot,

said stamping also having a flange portion extending from one edge thereof at an angle of approximately 90° from the body portion of the stamping,

an aperture formed centrally of said flange,

a substantially U-shaped stamping adapted to be pivotally connected to said flange,

means for making said pivotal connection including a pivot pin passing through said opening in the flange,

a pair of openings formed at the extremities of said U-shaped stamping,

a hook engaging member including a pair of ears having openings therein,

a second pivot pin extending through the openings in the extremities of said U-shaped member and through the openings in said ears,

a hook member including a second substantially U-shaped member with one end of the second U-shaped member beyond the other end of the second U-shaped member and the former end having an opening formed therein through which said second pivot pin extends,

resilient means for biasing the hook engaging member toward the other end of the hook, and

means for retaining said second pivot pin in said assembly.

4,224,723

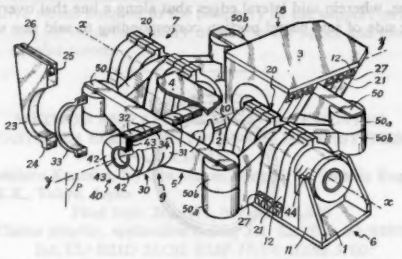
FLEXIBLE CONNECTION DEVICE

Jean C. Clebant, Carbon-Blanc, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Dec. 18, 1978, Ser. No. 970,360
Claims priority, application France, Sep. 12, 1978, 78 26149
Int. Cl.² A44B *21/00*
U.S. Cl. 24—263 R **12 Claims**

1. A flexible connection device for transmitting high forces between first and second rigid bodies adapted to be impelled with relative movements of rotation of limited amplitude, about a central point situated at the connection level, in which device the said relative movements are allowed by the positioning, between the rigid bodies, of connecting elements made, at least partly, of resilient material, wherein the connection is of the Cardan type and comprises a rigid intermediate structure, a first modular assembly of flexible connection ele-

ments placed between the intermediate structure and the first rigid body to allow the relative rotation of the structure and of the first rigid body about a first axis, and a second modular assembly of flexible connection elements placed between the



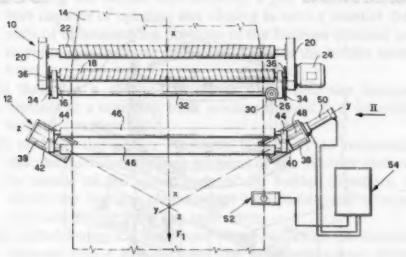
intermediate structure and the second rigid body to allow the relative rotation of the structure and of the second rigid body about a second axis, the first and second axes converging in said central point.

4,224,724

SYSTEM FOR OPENING FABRICS IN ROPE-FORM

Mariano Bassani, Via Trento, Trieste 7, Arcore, Milan, and Mario Bianco, Loc. Vaccheria, 7/2, Alba (Cuneo), both of Italy

Filed May 16, 1978, Ser. No. 906,412
Claims priority, application Italy, Jun. 15, 1977, 68386 A/77
Int. Cl.[2] D06C *3/06*
U.S. Cl. 26—75 **6 Claims**



1. A system for opening fabrics in rope-form, comprising in combination:

(a) a spreader device (**10**) comprising a structure (**20**) supporting at opposite ends thereof at least two double spirally scored spreader rolls (**18, 22**) rotatably driven in the opposite direction to the fabric (**14**) feed direction and with their axes parallel, and means (**26, 34, 36**) for angularly displacing said structure (**20**) in such a manner as to vary the angle of inclination of the plane containing the axes of the spreader rolls (**18, 22**);

(b) a centering device (**12**) disposed at a predetermined distance downstream of the spreader device (**10**) and comprising:

a structure (**44**) supporting at least two centering rolls (**46**) disposed with their axes parallel and lying in a plane substantially parallel to the fabric (**14**) feed axis (x—x);

said structure (**44**) being hinged at the ends about axes perpendicular to the plane containing the axes of the centering rolls (**46**), to two slides (**40, 42**) displaceable along two axes (y—y, z—z) contained in a plane parallel to the aforesaid plane and converging towards the fabric (**14**) feed axis (x—x) downstream of the centering rolls (**46**);

sensor means (**52**) sensitive to changes in the direction of the fabric (**14**) downstream of said rolls, and

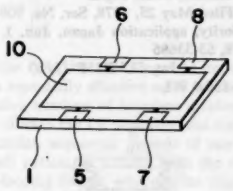
actuator means (**50**) controlled by said sensor means (**52**) and arranged to displace one of the slides (**40**) in such a manner as to vary the inclination of the axes of the centering rolls (**46**) between a central position in which said axes are perpendicular to the fabric (**14**) feed axis (x—x), and two end positions in which said axes are equally inclined to said axis (x—x) but in opposite directions, the means for rotatably driving the spreader rolls (**18, 22**) comprising an electric motor (**24**) and a drive supported by one of the two support structures (**20**), the spreader device and the centering device being 250 mm to 750 mm apart.

4,224,725

METHOD FOR MANUFACTURING AN ACOUSTIC SURFACE WAVE INTERACTION DEVICE

Michio Kadota, Kyoto; Tomoharu Sato, Kobe, and Kenji Suzuki, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Mar. 26, 1979, Ser. No. 24,024
Claims priority, application Japan, Mar. 30, 1978, 53-37596
Int. Cl.[3] H01L *41/22*
U.S. Cl. 29—25.35 **6 Claims**



1. A method for manufacturing an acoustic surface wave interaction device comprising the steps of:

(a) preparing a piezoelectric plate having first and second flat major surfaces;

(b) forming a plurality of interdigitated electrodes having a predetermined pattern on said first flat surface of said piezoelectric plate, each of said interdigitated electrodes having a plurality of fingers which are interleaved and a terminal member connected to said fingers;

(c) applying a thin layer of dielectric material to said first flat surface such that said thin layer of dielectric material entirely covers said fingers of said interdigitated electrodes but leaves at least one portion of each of said terminal members uncovered;

(d) applying a first layer of conductive material on said second flat surface of said piezoelectric plate; and

(e) applying a predetermined DC voltage across the thickness of said piezoelectric plate, between said first flat surface of said piezoelectric plate and said first layer of conductive material, for polarizing said piezoelectric plate in the direction of its thickness.

4,224,726

HOT MELT CARPET SEAM ROLLER

William C. Walker, 2142 Yosemite Dr., Milpitas, Calif. 95035

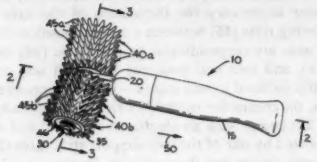
Filed Apr. 30, 1979, Ser. No. 34,660
Int. Cl.[3] B30B *3/00*; B22F *3/18*
U.S. Cl. 29—121.1 **12 Claims**

1. A carpet seam roller comprising:

(a) a handle with a longitudinal axis;

(b) an axle at one end of said handle extending generally in the transverse direction relative to the longitudinal axis of

said handle, said axle being formed with a plurality of sections converging toward one another in the direction toward said handle, the angle between the axes of said converging sections of said axle being in the range of 140° to 175°;



(c) a first plurality of carpet engaging discs mounted for rotation on one section of said axle with the axes thereof coincident with the axis of said one section; and

(d) a second plurality of carpet engaging discs mounted for rotation on another section of said axle with the axes thereof coincident with the axis of said other section.

4,224,727

METHOD OF MAKING THE BODY OF A HYDRAULIC MASTER CYLINDER

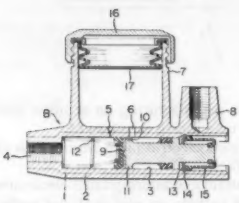
Yukikazu Miyashita, Ueda, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Ueda, Japan

Filed May 25, 1978, Ser. No. 909,661

Claims priority, application Japan, Jun. 1, 1977, 52-64351; Mar. 24, 1978, 53-33686

Int. Cl.³ B23P *15/00*

U.S. Cl. 29—156.4 WL **4 Claims**



1. A method of making the body of a hydraulic master cylinder comprising the steps of: forming a cylindrically shaped inner body section of substantially uniform wall thickness at all parts thereof, having a cylinder bore therein; casting an outer body section on said inner body section around the outer periphery thereof said outer body section having an oil reservoir intergrally formed therein, from a material substantially the same as that of said inner body section, whereby, said inner and outer body sections fuse to one another at the cylindrical interface therebetween and forming port means through said outer and inner body sections for communication between the interior of said reservoir and the cylinder bore of said inner body section.

4,224,728

METHOD OF MAKING AN ADJUSTABLE FINGER RING

Roland Paolino, 14 Riverview Dr., N. Providence, R.I. 02904

Filed Oct. 16, 1978, Ser. No. 952,548

Int. Cl.³ B23D *15/00;* **A44C** *9/02*

U.S. Cl. 29—160.6 **1 Claim**

1. A method of forming an adjustable shank finger ring comprising the steps of die cutting an integral elongated shank portion and barrel portion from a single piece of metallic material, wherein the shank portion has a longitudinal dimension substantially greater than that of said barrel portion and the barrel portion has a lateral dimension substantially greater than that of said shank portion, forming a central longitudinally extending rib in said shank portion that extends along one side of said shank portion substantially the length thereof, rolling over the lateral edges of said barrel portion to define a tube, wherein said lateral edges abut along a line that overlies the side of said barrel portion corresponding to said one side

and that is substantially coincident with an extension of the longitudinal axis of said shank portion, forming said shank portion in a circular configuration with said one side facing outwardly thereof and inserting the end thereof that is located opposite to the tubular barrel portion internally thereof, and securing an ornamental member on said barrel portion in overlying relation with respect to the junction of the abutting lateral edges thereof.

4,224,729

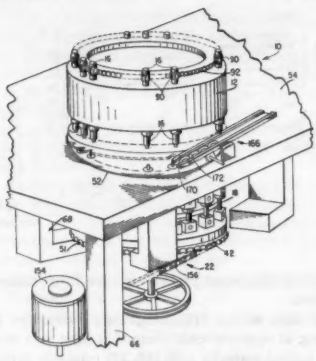
CONTINUOUS ROTARY AND WORK PROCESS APPARATUS

George M. Tarzian, Chicago, Ill., assignor to Chicago Automatic Machine, Inc., Skokie, Ill.

Filed Jun. 2, 1978, Ser. No. 911,795

Int. Cl.³ B23P *19/08, 23/00*

U.S. Cl. 29—240 **35 Claims**



1. A continuous rotary and work process apparatus comprising:

an upper annular turret;

a lower annular turret coaxial with and coupled to said upper annular turret;

a plurality of spindles circumferentially positioned about the upper annular turret;

a plurality of spindles circumferentially positioned about the lower annular turret and coaxial with the plurality of the upper annular turret spindles;

cam means removably mounted within the annulus of said turrets coupled to said spindles and positioned to enable access thereto from either the upper or lower turret; said means defining a movement for said spindles;

a plurality of upper support rods coupled to the upper and

lower annular turrets enabling the spindle positions in said upper and lower annular turrets to be in an accurate relationship to each other defining a definite registration between the upper and lower spindles;

a support structure to which the lower annular turret is coupled thereto; and

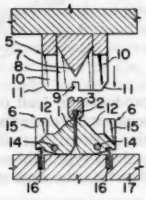
drive means coupled to the periphery of the support structure for imparting rotary motion to the upper and lower annular turrets.

4,224,730

METHOD AND APPARATUS FOR REMOVING FASTENER ELEMENTS FROM A SLIDE FASTENER CHAIN

Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 26, 1979, Ser. No. 24,006
Claims priority, application Japan, Jul. 12, 1978, 53/84905
Int. Cl.[3] B21D *53/50*; B23P *19/04*; B29D *5/00*
U.S. Cl. 29—408 **5 Claims**



1. A method for removing a fastener element from a tape cord of a carrier tape of a slide fastener chain which comprises the steps of

(a) holding the carrier tape between a pair of holder members capable of opening and closing in such a manner that ends of bifurcated leg portions of the fastener element are in contact with upper ends of said pair of the holder members,

(b) thrusting a wedge-like cutter blade into the fastener element at a coupling head portion thereof in a direction toward the tape cord,

(c) opening the holder members outwardly to outwardly deform the bifurcated leg portions of the fastener element by means of the upper ends of the holder members, to divide the fastener element into two pieces, and to separate said pieces from the tape cord,

(d) withdrawing the tape cord separated from the fastener element into a gap between the holder members before said edge of the cutter blade reaches said tape cord, and

(e) stopping the advancing of said cutter blade.

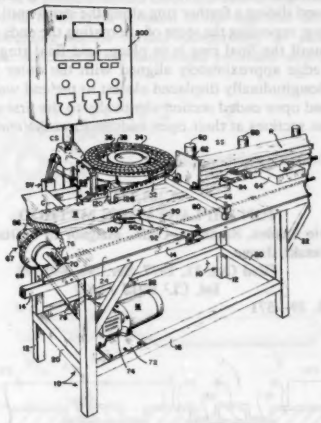
4,224,731

METHOD OF AND APPARATUS FOR APPLYING PRONGED SHEET METAL SPRING ANCHORING CLIPS TO FURNITURE RAILS

Harrison C. Lingle, Northbrook, Ill., assignor to Hartco Company, Lincolnwood, Ill.

Filed Sep. 15, 1978, Ser. No. 942,877
Int. Cl.[3] B23P *11/00*; B27F *7/00*
U.S. Cl. 29—432 **4 Claims**

1. In an apparatus for applying pronged anchoring clips to the edge regions of successive elongated wooden furniture rails at predetermined spaced distances therealong, in combination, a a rail-supporting table establishing a rail loading station and a clip-applying station, a clip-applying tool at said latter station effective to cause prong embedment of the clips into the rails, a conveyor effective when driven to conduct successive rails endwise along the table from the loading station to and through the clip-applying station, normally operative power actuated means for driving the conveyor, means establishing a source of clips, a clip-feeding device in the vicinity of said tool and effective when actuated to feed clip, one at a time, from the source to the tool to drive the clip prongs into the rails, a sensing device fixedly positioned along said path and effective to sense the leading edges of successive rails, an impulse-emitting device effective when actuated to emit electrical impulses in timed relation to the rate of travel of the rails along said path, means effective upon movement of the conveyor, and



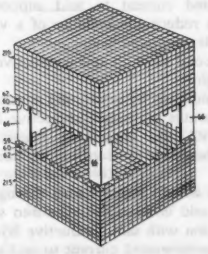
consequently of the rails, for actuating said impulse-emitting device and means repeatedly effective upon emission of predetermined cumulative numbers of impulses incident to sensing the leading edge of each rail for disabling said conveyor driving means to establish sequential periods of conveyor dwell and, at each dwell period, to actuate both the clip-applying tool and the clip-feeding device, whereby the clips are applied to the successive rails at predetermined spaced distances therealong.

4,224,732

METHOD OF MANUFACTURING A CONTAINER

Robert Lloyd, Galston, and Maxwell J. Turner, Sylvania, both of Australia, assignors to Energy Recycling Corporation Pty. Ltd., Sylvania, Australia

Division of Ser. No. 800,147, May 24, 1977, Pat. No. 4,170,312.
This application Feb. 8, 1979, Ser. No. 10,435
Claims priority, application Australia, May 27, 1976, 6072
Int. Cl.[3] B21D *39/02*
U.S. Cl. 29—463 **7 Claims**



1. A method of making a woven strip container by forming a first open ended section having an end wall and four side walls extending therefrom comprising the steps of weaving said end wall from metallic strips such that the free ends of the

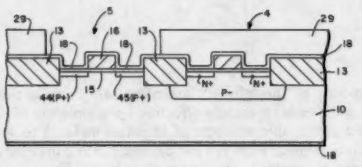
woven strips extend beyond the woven end wall on each of the four sides thereof, bending the unwoven portions of the strip through approximately 90° so that there are two pairs of opposite sides extending from the perimeter of said end wall; displacing the end of each alternate strip from the plane of the side and sliding a preformed metallic strip ring between the displaced ends of all four sides simultaneously, along the lengths of the unwoven strips until it abuts the woven end; alternating the displacement of the free ends of said unwoven strips and sliding a further ring along the strips until it abuts the first ring; repeating the steps of alternating the ends and adding rings until the final ring is in place; said final ring having its outer edge approximately aligned with the outer end of the strips longitudinally displaced closest to the end wall; forming a second open ended section identically to the first and joining the two sections at their open ends to form the enclosed container.

4,224,733

ION IMPLANTATION METHOD

Gregorio Spadea, Saratoga, Calif., assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 11, 1977, Ser. No. 840,793
Int. Cl.[2] B01J *17/00*
U.S. Cl. 29—571 **15 Claims**



1. A process for implanting ions into a semiconductor body comprising the steps of:

forming an insulating layer on said body,

forming a conductive layer covering said insulating layer,

forming a first mask on said conductive layer to define a first region,

supporting said body by supporting means in an ion implantation apparatus with said conductive layer in electrical contact with said supporting means, said supporting means connected to conduct current from said conductive layer,

implanting a first type of ions through said insulating layer and said conductive layer into said body in said first region with said conductive layer functioning to conduct ion-generated current to said supporting means and thereby to reduce the build-up of a voltage across the insulating layer,

forming a second mask on said conductive layer to define a second region,

supporting said body by supporting means in an ion implantation apparatus with said conductive layer in electrical contact with said supporting means, said supporting means connected to conduct current from said conductive layer,

implanting a second type of ions through said insulating layer and said conductive layer into said body in said second region with said conductive layer functioning to conduct ion-generated current to said supporting means and thereby to reduce the build-up of a voltage across the insulating layer,

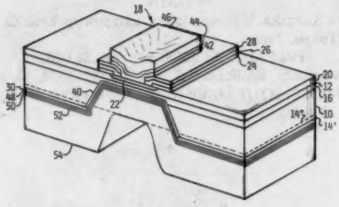
processing said conductive layer after said step of implanting a second type of ions to cause at least portions of said conductive layer to be nonconducting.

4,224,734

LOW ELECTRICAL AND THERMAL IMPEDANCE SEMICONDUCTOR COMPONENT AND METHOD OF MANUFACTURE

Karl H. Tiefert, Los Altos Hills, and Rockford C. Curby, Santa Clara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 868,003, Jan. 9, 1978, abandoned, which is a continuation of Ser. No. 630,825, Nov. 11, 1975, abandoned. This application Jan. 12, 1979, Ser. No. 2,926
Int. Cl.[3] B01J *17/00*
U.S. Cl. 29—583 **6 Claims**



1. A method of producing at least one low electrical and thermal impedance semiconductor component from a semiconductor substrate with a selected crystalline orientation whose bulk is a first conductivity type, said substrate having a first surface and a second surface, the method comprising the steps of:

fabricating at least one semiconductor device on the first surface of the semiconductor substrate;

controllably etching the second surface of the substrate to thin the cross-section of the selected location for each semiconductor device by forming a cavity of limited lateral extent adjacent to the selected location of each of the semiconductor devices on the first surface of the substrate, the etching continuing along the crystalline planes with the shape of the cavity being defined by the selected crystalline orientation of the substrate;

selectively metalizing the first surface of the substrate after the fabricating step has been completed;

metalizing the second surface, and the interior of the cavities therein, with a metallic layer that is at least as thick as those portions of the substrate surrounding each cavity to overfill each of the cavities; and

lapping and polishing the second surface of the substrate to remove the metalization from, and to expose those areas of the substrate that surround each cavity and to thin the metalization within each cavity to a selected uniform thickness that is substantially thicker than the cross-section of the substrate in the location of the semiconductor devices.

4,224,735

METHOD OF PRODUCTION MULTIFILAMENTARY INTERMETALLIC SUPERCONDUCTORS

Morris S. Young, Murray Hill, and William G. Marancik, Basking Ridge, both of N.J., assignors to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 832,498, Sep. 12, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,103
Int. Cl.[3] H01L *39/24*
U.S. Cl. 29—599 **1 Claim**

1. In the method of manufacturing a composite multi-filamentary superconductor of the type A_3B where A is selected from the group consisting of Nb and V, and B is selected from the group consisting of Sn and Ga by

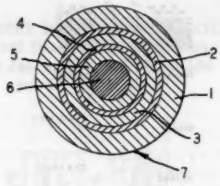
(a) forming a composite billet having a plurality of filaments of A embedded in a matrix of Cu and having a source of B external to the Cu matrix,

(b) extruding said composite billet to reduce its cross sectional area and increase its length,

(c) wire drawing the extruded product to the final conductor cross sectional area, and

(d) heat treating the so reduced conductor to cause the B material to diffuse into and through the Cu and react with the filaments of A to form A_3B,

the improvement which comprises



providing the B material external to the Cu matrix in the preextrusion billet in the form of surrounding concentric uniform thickness annual layers of B surrounded by concentric annular layers of Cu, the thickness of B being approximately, but not exceeding, 0.50 mm per layer, and

providing a plurality of such layers of B material and Cu, the number of such layers being determined by the total amount of B material required to react with the available A material to form A_3B.

4,224,736

PROCESS FOR SEALING ELECTROCHEMICAL CELLS

Ralph H. Feldhake, Verona, Wis., assignor to ESB Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 794,895, May 9, 1978, Pat. No. 4,122,242. This application Aug. 7, 1978, Ser. No. 931,641

The portion of the term of this patent subsequent to Oct. 24, 1995, has been disclaimed.

Int. Cl.³ H01M *2/04, 2/08*

U.S. Cl. 29—623.2 **10 Claims**

1. A process for manufacturing an improved grommet and metal cover for use in a galvanic cell, the process comprising:

(a) swelling the grommet which is comprised of a polyolefin or a nylon and which has been placed tightly around the periphery of the metal cover until the grommet is loose upon the metal cover,

(b) forcing a sealant solution between the swollen grommet and metal cover, the sealant solution comprising solvent and sealant material of rosin, polystyrene, polyolefin ethylene vinyl acetate, polyamine, bitumin or thermoplastic elastomer and,

(c) shrinking the grommet to substantially its original size to trap the sealant material between the grommet and metal cover.

4,224,737

PIPE CUTTER WITH EASILY DETACHABLE HANDLE

Jim R. Hart, 3331 Lovelaceville Rd., Paducah, Ky. 42001

Filed Nov. 6, 1978, Ser. No. 957,675

Int. Cl.³ B23D *21/06;* B26B *27/00*

U.S. Cl. 30—99 **15 Claims**

1. A ratchet-type close quarters pipe cutter with easily uncouplable handle, comprising:

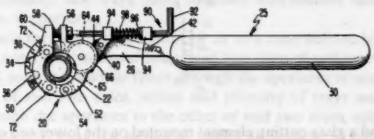
an annular cutting head for positioning about a pipe to be cut and provided with a plurality of peripheral teeth;

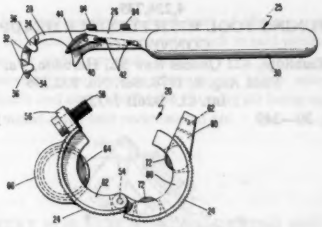
a cutter mounted on said cutting head for cutting the pipe upon rotation of said cutting head about the pipe;

adjustment means for progressively urging said cutter into cutting engagement with said pipe;

a handle for coupling to said cutting head after said head is positioned about the pipe for unidirectionally rotating said cutting head;

means attached to the handle for coupling and uncoupling said handle to said cutting head comprising at least one gripping element engageable with said peripheral teeth of said cutting head and a ratchet member spaced from said gripping element in opposed relationship thereto for drivingly engaging said peripheral teeth upon rotation of said handle in a predetermined direction and to slip over said peripheral teeth upon rotation in the opposite direction, said coupling means further comprising an elongated member attached to the handle and provided with a semi-





circular arm at its front end with the at least one gripping element and ratchet member attached to and circumferentially spaced about the semi-circular arm, and spring means for urging the ratchet member toward the gripping element for coupling the handle to the cutting head, the opening of the semi-circular arm and the distance between the gripping element and the ratchet member when moved away from the gripping element against the urging of the spring means permitting easy coupling on and easy uncoupling from said cutting head;

means for preventing inadvertent lateral displacement of said handle from said cutting head during use.

4,224,738

PRECISION GLASS CUTTER

Aloysius F. Magewick, and Elaine M. Magewick, both of 17360 Francavilla, Livonia, Mich. 48152

Filed May 18, 1979, Ser. No. 40,450

Int. Cl.³ C03B *33/10*

U.S. Cl. 30—164.95 **8 Claims**

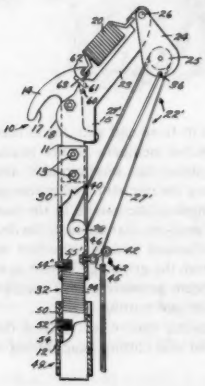
1. A precision fatigue-reducing glass cutter, comprising

an elongated substantially rigid upright glass cutter handle structure including an upper part, a lower part, and an intermediate part disposed between said upper part and said lower part in interconnecting relationship therewith, said intermediate part being wider than said upper part

and said lower part and having a forefinger-receiving aperture therethrough,

and a glass-cutting element mounted on the lower end of said lower part.

4,224,739
PRUNING TOOL WITH FLEXIBLE HEADPOLE CONNECTION
Frank Emblidge, 422 Queens Row St., Herndon, Va. 22070
Filed Aug. 8, 1978, Ser. No. 932,295
Int. Cl.³ B26B *13/26*
U.S. Cl. 30—249 **14 Claims**



1. In a pruning tool comprising means for cutting vegetation, an elongated pole for mounting said vegetation cutting means and means for effecting operation of said cutting means; and

means for mounting said cutting means with respect to said pole so that said cutting means may assume an operative cutting position at substantially any angle between about 0° and about 90°, both with respect to the direction of elongation of said pole and a line perpendicular to the direction of elongation of said pole;

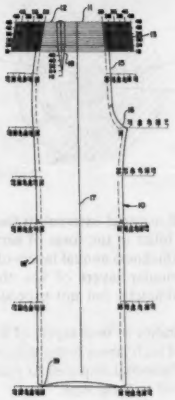
said mounting means comprising a flexible element operatively connected to said cutting means and said pole.

4,224,740
PANTS SUIT PATTERN
Donald A. Gibson, 2940 Pease Dr., Rocky River, Ohio 44116
Filed Jun. 8, 1978, Ser. No. 913,857
Int. Cl.³ A41H *3/00*
U.S. Cl. 33—17 A **3 Claims**

1. A method of making a pants front pattern from a master pattern, and characterized by including graded measurement outwardly from said pattern based on the waistline, widest hip, outside seam length, crotch measurement or front waistline to center back waistline, wherein there is a grid on either side of the waist, one dimension of which is for the waist measurement and the other dimension of which is for the crotch measurement;

the method which employs a straight edge and curves for drawing the pants pattern, comprising:

A. placing a tissue over a master pattern;



B. marking the tissue over the waist grid for the waist measurement and moving same with respect to the grid for crotch measurement;

C. connecting waist marks to form the waistline;

D. marking all graded measurements according to the widest hip measurement;

E. connecting all graded measurements to form a pants pattern on said tissue; and

F. using a curve for connecting the marks on the graded measurement of the lower portion of the crotch and then completing the marks with the straight edge;

4,224,741
BOW SIGHT
Frank W. Perry, 2608 S. 61 St., Philadelphia, Pa. 19142
Filed Mar. 27, 1979, Ser. No. 24,493
Int. Cl.³ F41G *1/00*
U.S. Cl. 33—265 **9 Claims**

1. A bow sight for use with an archer's bow, comprising:

a mounting bracket, having first and second portions, and including means for mounting said bracket to said bow;

an arm rotatably mounted to said first portion of said bracket, between said first portion and said bow, so as to be rotatable over a range of positions;

spring means, disposed between said arm and said first portion of said bracket, for biasing said arm against said second portion of said bracket;

hand adjustable locking means for locking said arm against rotation;

a sighting bead secured on the rotatable end of said arm; and,

scale means on said bracket adjacent said arm and extending over said range of positions.

4,224,742

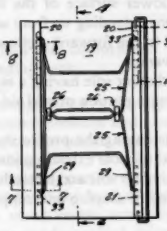
PORTABLE DRAWING APPARATUS

Lloyd E. Clarke, 1145 Dean St., Apt. 3, Brooklyn, N.Y. 11216

Filed Jun. 8, 1979, Ser. No. 46,856

Int. Cl.³ B43L *13/02*

U.S. Cl. 33—443 **3 Claims**



1. A portable drawing apparatus, comprising in combination, a drawing board and a T-square assembly slidable thereupon, said T-square assembly being comprised of a T-square and a shoe slidable on an outward end of said T-square; said drawing board including a foldable easel adjustably mounted on a rear of said board, said easel comprising two generally U-shaped wire frames, a central leg of each said frames being pivotally connected to a same pair of feet, the ends of one said frame being selectively received in a row of holes near one end of a rear of said board, while the ends of the other said frame is selectively received in a row of inclined notches of a slot near an opposite end of a rear of said board.

4,224,743

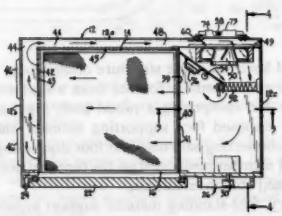
FOOD DEHYDRATING MACHINE

Chad S. Erickson, and David A. Dornbush, both of Minneapolis, Minn., assignors to Alternative Pioneering Systems, Inc., Bloomington, Minn.

Continuation-in-part of Ser. No. 806,774, Jun. 15, 1977. This application Jun. 19, 1978, Ser. No. 916,848

Int. Cl.³ F26B *21/02*

U.S. Cl. 34—219 **9 Claims**



1. Apparatus for removing the moisture content of foodstuffs in a controlled manner comprising in combination:

(a) an outer shell having at least three side walls, a top and a bottom, said shell defining an opening;

(b) a door member hingedly mounted and adapted to seal said opening when said door is in its closed position;

(c) an inner shell having two sides, a back, a top and a bottom disposed within said outer shell, the open front of said inner shell being juxtaposed to said opening in said outer shell, said two sides each having defined therein a plurality of horizontal rows of apertures spaced apart from one another by predetermined distances, said apertures allowing the passage of air therethrough one of said apertured sides having an adjacent diffusion member, said diffusion member comprising reticulated foam;

(d) means on said two sides of said inner shell for supporting a plurality of trays in parallel, horizontal, spaced apart relationship, said trays being disposed intermediate said rows of apertures;

(e) means for supplying pressurized air to a zone defined by said outer shell and said one of said two sides of said inner shell such that said air flows through the apertures in said one of said two sides, across said plurality of trays and through the apertures in the other of said two sides, said means providing the air under sufficient pressure to provide air flow to each of said trays at a substantially uniform rate, said diffusion member serving to orient said air flow;

(f) means for recirculating at least part of the air passing through said other of said two sides back to said means for supplying air under pressure; and

(g) vent means for controlling the amount of air entering from outside and outer shell, said entering air being subsequently mixed with said recirculated air.

4,224,744

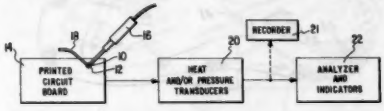
CIRCUITRY FOR TEACHING SOLDERING AND PRACTICE CIRCUIT BOARD FOR USE THEREWITH

William J. Siegel, Silver Spring, and Gerald J. Ferguson, Jr., Upper Marlboro, both of Md., assignors to Pace Incorporated, Silver Spring, Md.

Filed May 12, 1978, Ser. No. 905,336

Int. Cl.³ G09B *25/02*; B23K *1/00*; H05K *3/34*

U.S. Cl. 35—13 **73 Claims**



1. A practice printed circuit board for use with apparatus for teaching a trainee whether the change of a physical quantity at a terminal of the board corresponds to a desired rate of change of the quantity at the terminal, said practice printed circuit board comprising

a support;

a plurality of said terminals comprising holes extending through said support where each hole is coated with an electroconductive material and where the holes are arranged on said support in an ordered array; and

a plurality of sensing means mounted with respect to said support respectively in the vicinities of said plurality of terminals for producing electrical signals representative of said physical quantities occurring at said terminals

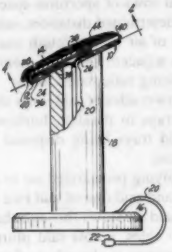
whereby an operation can be performed with a device at one of said terminals which cause said physical quantity to change so that the sensing means associated with said one terminal produces said electrical signal which is representative of the change in said physical quantity at the terminal.

4,224,745

TEACHING AID FOR HAIR SETTING AND COLORING

Tom W. Hubbard, 3319 Pembrook Dr., Sarasota, Fla. 33579

Filed Oct. 30, 1978, Ser. No. 955,911
Int. Cl.[3] G09B 19/00
U.S. Cl. 35—59 4 Claims



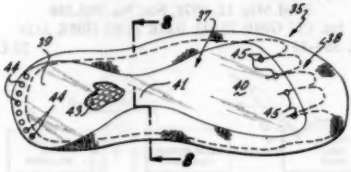
1. A model for teaching and learning the art of hair setting and hair coloring comprising a platform having a flat surface, a flat piece of hair material, means for attaching said flat piece of hair material to the flat surface of the platform and heating means maintaining the temperature of said flat surface at substantially human body temperature, wherein said heating means is a thermostatically-controlled electrical heating element.

4,224,746

SHOE VENTILATING INSOLE

Sunyong P. Kim, 535 N. Cahuenga Blvd., Los Angeles, Calif. 90004

Filed Feb. 1, 1979, Ser. No. 8,278
Int. Cl.[2] A43B 7/06, 13/40
U.S. Cl. 36—3 B 1 Claim



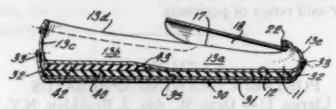
1. A shoe ventilating insole assembly comprising:
a ventilating air transfer envelope formed of an air impervious material, said envelope including a heel portion and a ball portion connected by a narrow passageway portion;
each said portion having a plane areal size smaller then the corresponding portion of the inner sole of a typical shoe;
said air transfer envelope having a plurality of air inlet ports near the rear of the heel portion thereof and having a plurality of air outlet ports near the front of the ball portion thereof;
a filler member formed of a resilient highly porous material enclosed in said transfer envelope; and
a peripheral cushioning support member formed of a resilient material which is substantially more solid then said filler material;
said peripheral cushioning support member closely fitted about and adhesively bonded to the curved longitudinal sides and the front end of said envelope so as to form a continuation of the plane areal surface thereof to provide an insole assembly having an overall outer contour corresponding to the inner sole of a typical shoe.

4,224,747

MOCCASIN CUSHIONED SOLE

Sidney Winfield, 55 Hickory Dr., Roslyn, N.Y. 11576

Filed Jan. 10, 1979, Ser. No. 2,463
Int. Cl.[2] A43B 3/14, 13/12
U.S. Cl. 36—11 6 Claims



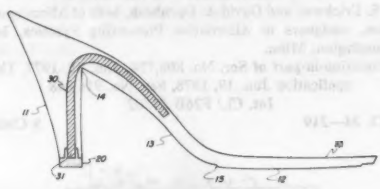
1. A moccasin comprising:
a continuous vamp comprising a lower section for extending over the entire lower surface of the foot, and integral upper side portions extending up from said lower section; an upper secured to the forward sectin of said upper side portions of said vamp;
a full outer sole; said outer sole having a side wall extending up to and engaging a portion of said side portions of said vamp;
a full length midsole having the profile shape of said vamp lower section; said midsole extending inside the enclosure defined inside said outer sole and beneath said vamp lower section for assisting in shaping and supporting said outer sole;
a full length cusion pad between said midsole and said vamp; and
a heel cushion pad between said full length cushion pad and said vamp, whereby the shape and feel of a comfortable moccasin are maintained.

4,224,748

SHOE SOLE

Raymond Whitchurch, Sullivan, Mo., assignor to Meramec Industries, Inc., Sullivan, Mo.

Filed Mar. 23, 1979, Ser. No. 23,159
Int. Cl.[2] A43B 13/28, 13/37, 23/22
U.S. Cl. 36—24.5 3 Claims

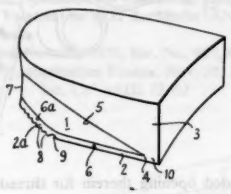


1. A raised heel, shoe sole structure comprising:
(a) a unitary sole member formed from a synthetic organic polymer and comprising a raised heel, a generally horizontally disposed foot supporting member and a shank portion connecting said heel and foot supporting member;
(b) a toplift member positioned on the terminal portion of the heel of said sole member; and
(c) a unitary, free-standing metallic support member having a cross-sectional area varying from about 0.004 to about 0.04 square inches embedded within the full length of the heel of said sole member and for at least about 50% of the length of the shank portion of the sole member, said toplift member attached to and supported by a free end of said metallic support member.

4,224,749
HEELS FOR FOOTWEAR

Juan A. Diaz-Cano, 8 Willow St., Romford, Essex, England

Filed Dec. 26, 1978, Ser. No. 972,936
Int. Cl.[3] A43B 21/26
U.S. Cl. 36—35 R 5 Claims



1. A heel for footwear comprising:
a ground-engaging part;
an upper part;
a resilient, compressible generally wedge-shaped insert which is secured between said ground-engaging part and said upper part and which tapers in depth away from the back of the heel;
said ground-engaging part having a rear end which slopes upwardly towards the back of the heel;
said resilient, compressible generally wedge-shaped insert having a rear end face which is inclined downwardly and rearwardly away from the front of the heel,
a flexing region extending from side-to-side across said heel between said upwardly sloping rear end and the remainder of said ground-engaging part, and
a recess in said upper part to accommodate cushioning for the heel of a wearer's foot.

4,224,750
FOOT-WEAR

Marthienes J. Delport, 21 Church St., Strand, South Africa

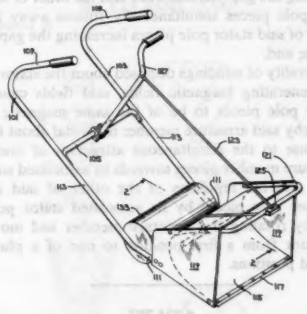
Filed May 10, 1976, Ser. No. 684,900
Claims priority, application South Africa, May 16, 1975, 75/3187; Oct. 2, 1975, 75/6254; Nov. 24, 1975, 75/7336
Int. Cl.[2] A43B 7/22, 5/02
U.S. Cl. 36—91 13 Claims

1. A sports shoe adapted for use as a running shoe, said shoe including a metatarsal arch support comprising:
(a) a heel portion;
(b) a medial portion extending from the heel portion; and
(c) a metatarsal portion extending from the medial portion and terminating in a rounded metatarsal edge; which support increases in width from the medial portion to the metatarsal edge;
(d) the medial portion having a transverse cross-sectional shape in the form of a single wave;
(e) the metatarsal portion having a transverse cross-sectional shape in the form of a single wave, which latter wave is flatter than the wave of the medial portion, and the metatarsal portion flattening by way of a wedge-shaped portion, as viewed in longitudinal cross-section, into the rounded metatarsal edge;
(f) the metatarsal edge being adapted in use to be located substantially below the joints of the five metatarsal bones to the proximal phalanges of the foot of a wearer; and
(g) the arch support further having a longitudinal cross-sectional shape, in the medial and the metatarsal portions taken together, in the form of a single wave, the peak of the last mentioned wave being located in the metatarsal portion;
(h) the shoe further including a plurality of spikes arranges such that two rear spikes are respectively located between the first and second metatarsal bones and between the fourth and fifth metatarsal bones, two intermediate spikes are located respectively towards the back of the first proximal phalanx and the fifth proximal phalanx, and two front spikes are located respectively under the first distal phalanx and the fourth distal phalanx.

4,224,751
SNOW LIFTING DEVICE

George J. Schoemann, 2906 W. Bottsford Ave., Greenfield, Wis. 53221, and Robert Schoemann, 2032 S. 94th St., West Allis, Wis. 53227

Filed Jan. 22, 1979, Ser. No. 5,039
Int. Cl.[3] E01H 5/02
U.S. Cl. 37—53 3 Claims

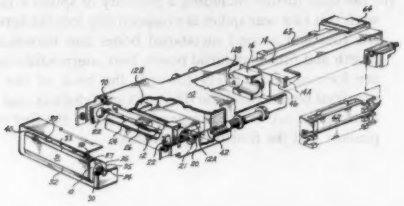


1. A snow removal device comprising:
(a) a frame which further comprises a pair of rails and a plurality of cross braces to maintain the rails in spaced relationship, each rail being bent at a position intermediate its ends, the angle of the bend being such as to place the rear end of the frame at a height above ground convenient for pushing;
(b) a flexible blanket attached at its leading edge between the rails at the end opposite the handle end of the frame;
(c) a blade attached between the rails of the frame and to the leading edge of the blanket;
(d) a pair of towers, each of which is attached to one rail at the front end of the frame;
(e) a tower brace which is attached between the towers and maintains them in spaced relationship; and
(f) flexible cable means which is attached to the back side of the blanket on one end, passes around the tower brace and is attached to the rear end of the frame on the other end.

4,224,752
ELECTROMAGNETIC ANNUNCIATOR

Ronald W. Baxter, Shepperton, England, assignor to Page Engineering Company (Sunbury-on-Thames), Ltd., Middlesex, England

Filed Oct. 11, 1978, Ser. No. 950,473
Claims priority, application United Kingdom, May 24, 1978, 21880/78
Int. Cl.³ G09F 9/00
U.S. Cl. 40—463 30 Claims



1. An indicating device including an indicator having a plurality of information bearing surfaces adapted to be movable from a first position to a plurality of second positions comprising:

(a) an elongate armature member pivotal about its axis coupled to said indicator, said member having a plurality of oppositely magnetically polarized armature pole pieces extending radially outwardly therefrom;

(b) a stator member having a plurality of magnetizable pole pieces disposed adjacent said armature pole pieces with a gap therebetween such that when said armature member pivots about its axis, one of said armature member pole pieces rotates toward one of said stator pole pieces decreasing the gap therebetween and the other of said armature pole pieces simultaneously rotates away from the other of said stator pole pieces increasing the gap therebetween; and,

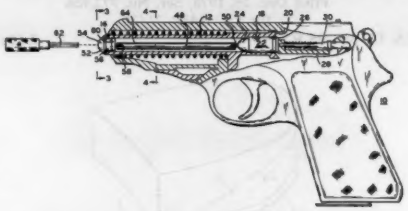
(c) a plurality of windings disposed about the stator member for generating magnetic fields, said fields causing said stator pole pieces to be of the same magnetic polarity whereby said armature member is pivotal about its axis in response to the simultaneous attraction of one of said armature member pieces towards its associated stator pole piece and the repulsion of the other of said armature member pole pieces by its associated stator pole piece thereby rotating the armature member and moving the indicator from a first position to one of a plurality of second positions.

4,224,753
SAFETY DEVICE FOR FIREARMS

Thomas F. Bielman, Box 373 Star Route 550, Marquette, Mich. 49855

Filed Aug. 4, 1978, Ser. No. 931,137
Int. Cl.³ F41C 27/00
U.S. Cl. 42—1 LP 2 Claims

1. A safety device for a firearm including a barrel having a muzzle end and a cartridge-receiving chamber at the opposite end, and a firing pin, comprising: a dummy cartridge adapted to be seated in said chamber and having a bullet nose end and a rim end; an elongated rod element having opposite ends and adapted to extend through said barrel from said muzzle into said chamber; and a muzzle cap element on one end of said rod element and adapted to be seated in and close said muzzle end; said bullet nose end of said dummy cartridge having means for removably receiving the opposite end of said rod element thereby to retain said cap element in said muzzle, said receiving means comprising an elongated retainer member having opposite ends with one end seated in an opening in said nose end and its other end extending through an opening in said rim end and being secured therein, said one end of said retainer member

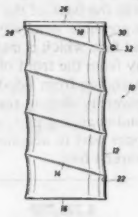


having a threaded opening therein for threadedly receiving said opposite end of said rod element.

4,224,754
PORTABLE HUNTING BLIND

S. Wayne Derryberry, Box 54, Point Blank, Tex. 77364

Filed Jan. 11, 1979, Ser. No. 2,677
Int. Cl.³ A01M 31/02
U.S. Cl. 43—1 1 Claim



1. A portable hunting blind comprising:

(a) an elongate coil spring of internal diameter sufficient to encircle a hunter and having an extended height to enclose the hunter;

(b) a flexible cloth cover having an elongate tubular shape with an open upper end fastened around said spring, said cloth cover elongating with said spring to enclose the hunter therein and including a separately movable, circular, top flap at one end thereof to cover said open upper end to protect the hunter against inclement weather;

(c) inflatable seat means fitting within said elongate spring and said flexible cloth cover for supporting a hunter seated thereon, said inflatable seat means comprising a bottom cushion which is inflated to form and define a generally horizontal surface enabling the hunter to sit thereon and which further includes an inflated back cushion positioned relative to the bottom cushion to serve as a back rest, said back cushion and said bottom cushion being two separately inflatable cushions, each having valve means for inflation and each of said valve means being separately closable;

(d) said back cushion being affixed to said bottom cushion at a location to define an upstanding back support adjacent to a horizontal surface, said seat means having a semicircular external profile to concentrically fit within said tubular shaped cloth cover;

(e) releasable connective means provided on said back cushion for attaching said seat means to said flexible cloth cover; and

(f) portal means in said cloth cover closable by a selectively movable portion of said cloth cover which is arranged adjacent to said portal means for closing said portal means and which alternately opens said portal means to enable

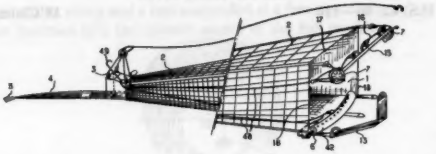
the hunter to position a weapon for discharge through said portal means.

4,224,755

TRAWL-NET APPARATUS HAVING CONTROLLED NET OPENING AND CLOSING

Philippe Bourret, Noumea, New Caledonia, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine, France

Filed Nov. 27, 1978, Ser. No. 963,968
Claims priority, application France, Nov. 30, 1977, 77 36071
Int. Cl.³ A01K *73/02*
U.S. Cl. 43—9 **11 Claims**



1. In a trawl-net apparatus with controlled opening and closing, useable particularly for selectively gathering pelgic micro-nection, the apparatus including a net having a mouth, a rear portion, a diving panel and a back bar at said mouth, the net being continued at said rear portion with a trawl-net bottom and a collector, the improvement wherein said rear portion of said net is connected to an entrance of said trawl-net bottom by a frame chamber provided with a swivellable door having a central opening, sides of said entrance of said trawl-net bottom being fixed on said door around said central opening; wherein said rear portion of said net is fixed to an entrance of said frame chamber, said door in a horizontal position in said frame chamber, closing said trawl-net bottom by flattening same and leaving said rear portion of said net in communication with space outside of said frame chamber and said door in a vertical position closing an outlet of said frame chamber providing communication between said rear portion of said net and an inlet of said trawl-net bottom by opening of said door; and wherein said frame chamber is provided with a locking device for maintaining said door in the horizontal position and with swivelling means for swivelling said door to the vertical position after unlocking; and including a first automatic control means operatively coupled to said locking device for initiating movement of said door from the horizontal position to the vertical position; and wherein said net is provided with a folding backclosing system including a second automatic control means for letting said mouth of said net fold back rearwardly, and stopper means for closing said mouth, said stopper means being responsive to said second automatic control means.

4,224,756

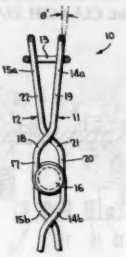
ANIMAL TRAP

Herbert H. Loeffler, Arlington, Mass., assignor to Woodstream Corporation, Lititz, Pa.

Filed Jan. 19, 1979, Ser. No. 5,034
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—90 **5 Claims**

1. In an animal trap having two similar frames each having opposite side portions serving as jaws and connecting ends, said frames being pivotally connected through adjacent ends for relative rotation between set and closed positions about a common axis of rotation, trigger means for releasably maintaining the trap in a set position and an actuator, capable of rapidly and forcefully effecting such rotation upon release of the trigger means, said actuator having two arms spring biased at one end so that the other ends if unobstructed would move to a distance substantially greater than the width of said frame ends, each arm terminating in a ring respectively adapted to encircle adjacent ends of the frames on opposite sides of said axis, the improvement wherein each end of each frame comprises:

a pair of outer arm portions connected to opposite jaws of the frame respectively, said outer arm portions having a common longitudinal axis which passes through said common axis of rotation of the frames;



a pair of inner arm portions on opposite sides of said common longitudinal axis respectively; and

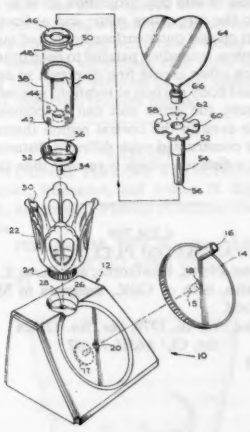
a pair of intermediate arm portions connecting the respective outer arm portions with the respective inner arm portions.

4,224,757

TOY PERFUME MAKER

William J. Kelley, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 16, 1979, Ser. No. 12,925
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 R **5 Claims**



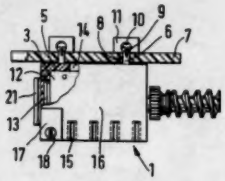
5. A toy perfume maker comprising a base, a cup having a gear surface on its lower periphery rotatably supported on the upper surface of the base, a gear meshing with the gear surface rotatably supported on the front surface of the base, a receptacle for a vial fixed to the base and mounted within the cup, a vial constructed to be held in a fixed position by the receptacle, a holder for a perfume concentrate having a portion adapted to fit into the vial and having means fixing the holder to rotate with the cup, and means for withdrawing the holder from the vial.

4,224,758

STRUCTURAL ELEMENT OF AN ASSEMBLY KIT

Artur Fischer, D-7244 Waldachtal, Tumlingen, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,691
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807429
Int. Cl.[3] A63H *33/10*
U.S. Cl. 46—23 9 Claims



1. A structural element of an assembly kit for mounting to a supporting plate provided with holes each having a predetermined transverse dimension, a drive unit including a motor and a transmission located adjacent to one another in a first direction, and a plurality of wheel axles spaced from each other in the first direction, the structural element comprising a body portion having an inner hollow arranged for receiving a motor therein, and side walls spaced from one another in a second direction which is transverse to the first direction, said body portion having an inner surface facing toward said inner hollow and an outer surface facing away from the same; a plurality of projections on said outer surface of said body portion and each arranged to extend through a respective one of the holes of the supporting plate, at least one of said projections having an outer end portion extending outwardly beyond the supporting plate said outer end portion having a transverse dimension exceeding said predetermined dimension; a tightening member located outwardly beyond the supporting plate and engaging said outer portion of said one projection so as to tighten said body portion to the supporting plate; and at least three connecting elements on said outer surface in each of said side walls of said body portion, extending parallel to each other and being spaced from each other in said first direction so as to connect wheel axles to said body portion at locations spaced in said first direction, whereby the drive unit can be connected to the supporting plate even in the central region thereof, and toy vehicles may be constructed with different distances between axles, including a distance which is smaller than the length of the drive unit.

4,224,759

ANIMATED PULL TOY

Raymond M. Saint-Pierre, Hawthorne, and Berne E. Danielsen, Pacific Palisades, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 16, 1979, Ser. No. 12,924
Int. Cl.[3] A63H *13/02*
U.S. Cl. 46—105 10 Claims

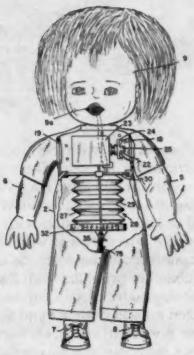
6. An animated pull toy representing an animal comprising a body, a head having a mouth, a pair of legs connected to the body, means for moving the legs when the toy is pulled to emulate a walking animal, means for causing the toy to emulate a sitting animal when the toy is released, a tail, and means responsive to placing an object in the mouth for causing the tail to wag.

4,224,760

BUBBLE-BLOWING DOLL

John Birdsall, Los Angeles, Calif., and Thomas Fauls, West Orange, N.J., assignors to Mego Corp., New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,594
Int. Cl.[3] A63H *13/00*
U.S. Cl. 46—116 18 Claims



1. A bubble-blowing doll, comprising a body including a head having a mouth opening; a ballon having an open end and a distensible end remote from the open end, and so mounted on the body that the open end is located within the body and the distensible end at the mouth opening; means for introducing a pressurized medium into said balloon through said open end to inflate said distensible end to the exterior of the head at the mouth opening; and means for selectively energizing the introducing means including an actuator having a ratchet wheel mounted in said body for rotation about an axis and an arresting pawl engaging said ratchet wheel and permitting the same to rotate in only one sense, said actuator further including a transmission interposed between the pressurizing means and the ratchet mechanism and activating the pressurizing means when the ratchet wheel rotates in said one sense.

4,224,761

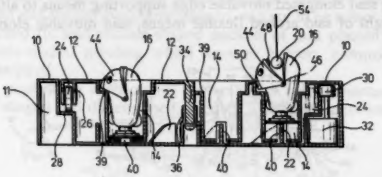
TOY FISHING PLAY UNIT

Kazuo Wakimura, No. 2-11-20, Nishiarai, Adachi-ku, Tokyo, Japan

Filed Apr. 25, 1979, Ser. No. 33,321
Claims priority, application Japan, Oct. 21, 1978, 53-144911
Int. Cl.[3] A63B *6/06*
U.S. Cl. 46—123 4 Claims

1. A toy fishing-play unit comprising a base plate which is provided on its bottom surface with a plurality of discontinuous upstanding ridges which are arranged circumferentially and irregularly, a turning disk turnably mounted on the base plate and provided therein with a plurality of cells each having a slit for passing the ridge therethrough, a plurality of fish models adapted to be removably received in the cells and consisting of a body, a mouth member swingably pivoted to

the body and a base for supporting the body, a driving unit for turning the turning disk, and a toy fishing tackle including a



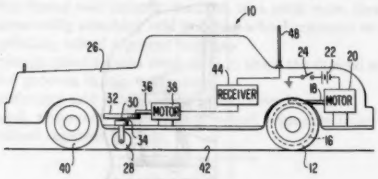
rod with a string and a bait suspended at a free end of the string for insertion into the opened mouth of the fish model.

4,224,762

RADIO CONTROLLED TOY VEHICLE

Robert E. McCaslin, 1227 Coldwater Canyon, Beverly Hills, Calif. 90210

Filed May 2, 1978, Ser. No. 902,458
Int. Cl.³ A63H *30/00*
U.S. Cl. 46—256 **4 Claims**



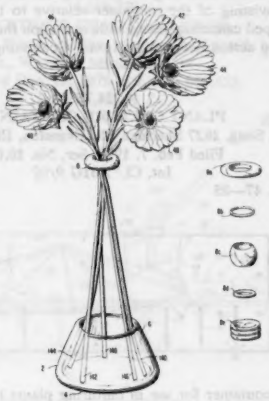
1. A radio controlled toy vehicle comprising: a support having a first wheel assembly and a drive means coupled with the first wheel assembly for moving the support in a forward direction; a second wheel assembly rotatably mounted on the support for steering the support, said second wheel assembly including a single wheel having a shaft rotatably mounted on the support for rotation in one direction through an arc of 360°; a drive motor carried by the support and having a drive shaft, there being means interconnecting the motor drive shaft and the single wheel drive shaft for rotating the latter relative to the support in response to signals applied to the drive motor; a radio receiver carried by the support and having an antenna input for receiving a radio signal and an output including an electronic switch coupled to the drive motor; a transmitter remote from the support and having a microphone for receiving input signals and a Schmitt trigger unit coupled to the microphone, said unit being operable to provide and output signal of a predetermined pulse width for an input signal whose pulse width is equal to or less than said predetermined value, said transmitter having an output means for radiating output radio signals to the input of the receiver so that signals at the output of the receiver can be used to actuate the switch and thereby the drive motor, said transmitter, said receiver and said drive motor being operable to cause rotation of the single wheel through a predetermined angle for an input signal to the input means of the transmitter whose pulse width is equal to or less than a preselected value.

4,224,763

VASE, HORTICULTURAL DISPLAY AND METHOD OF PREPARING A HORTICULTURAL DISPLAY

William A. Prindle, New Martinsville, W. Va., assignor to Viking Glass Company, New Martinsville, W. Va.

Filed Apr. 2, 1979, Ser. No. 26,629
Int. Cl.² A47G *7/07*
U.S. Cl. 47—41.11 **8 Claims**



1. A vase assembly for holding the elongated stems of a group of horticultural items in generally upstanding orientation, said vase assembly having a vertical central axis and comprising a base having means for supporting the lower ends of stems and holding said lower ends at locations which are spaced from the central axis, a retainer means supportable exclusively on the stems for holding the stems together in intersecting relationship in an area which is substantially smaller than said base and is spaced above said base and centered on said central axis, whereby lower portions of said stems converge upwardly toward said retainer means to form a stable structure of stems for supporting each other and the retainer means, with the upper portions of said stems diverging upwardly away from said retainer means.

4,224,764

CONTAINER HAVING ATTACHED TRAY

Ted Dziewulski, Rosemont, and Arthur H. Kay, Schaumburg, both of Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 14, 1979, Ser. No. 12,096
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—71 **17 Claims**

1. A container and tray combination which can be secured one with the other comprising an open top container having a bottom; a tray having a bottom; a first set of a plurality of camming means spaced around a first circular locus on a lower

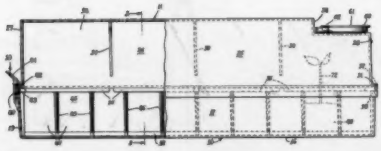
portion of said container; and a second set of a plurality of camming means attached to the upper portion of the bottom of said tray and being spaced around a second circular locus, said first and second sets of camming means being adapted such that in at least one position of the container relative to the tray one of said sets of camming means can be telescoped within the other said set of camming means without any substantial wedging action between said sets of camming means, said first and second sets of camming means being further adapted such that upon twisting of the container relative to the tray the thus telescoped camming means slide one upon the other to cause a wedging action between said sets of camming means.

4,224,765

PLANT CULTURE CONTAINER

John S. Song, 2827 Sheridan Pl., Evanston, Ill. 60201

Filed Feb. 7, 1979, Ser. No. 10,088
Int. Cl.³ A01G 9/02
U.S. Cl. 47—85 **7 Claims**



1. A container for use in culturing plants in a growth medium, said container comprising a base member having a rectangular bottom and four, substantially vertical walls extending upwardly from the bottom, a top member having a top and four, substantially vertical walls extending downwardly from the top with the distal ends thereof in juxtaposition to the distal ends of the walls of the base member, one of said members having means at the distal ends of the walls thereof and engaging the distal ends of the walls of the other member and supporting the top member on the base member and forming substantially a fluid-tight seal therebetween, said members defining an enclosed space within which said plants may be cultured with part of that space within the base member for holding said medium, the top member having a vent opening therein communicating with said space and the exterior of said container and removable cover means for said vent opening, an air filter mounted on the top member and across said opening, and a removable insert within said part of said space and subdividing that part of the space into a plurality of compartments, said insert being formed by a plurality of partitions having tops and bottoms, said partitions being thicker at the tops thereof than at the bottoms whereby said compartments are smaller at the tops than at the bottoms, some of said partitions having distal ends in juxtaposition to the walls of the base member, each of said distal ends being larger in transverse cross section than is the remainder of the partition thereby forming posts, said posts extending below the remainder of the partitions whereby there is a space below the remainder of the partitions through which liquid can flow.

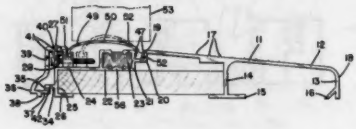
4,224,766

THRESHOLD WITH FLEXIBLE INSULATOR

Jerome C. Procton, Greensboro, N.C., assignor to Endura Products, Inc., Greensboro, N.C.

Filed May 21, 1979, Ser. No. 40,657
Int. Cl.³ E06B 1/70
U.S. Cl. 49—468 **3 Claims**

1. An insulating adjustable threshold comprising; an elongated sill, an arched flexible means projecting above said sill, said arched flexible means being integral and having a first elongated edge, a second elongated edge and an intermediate flexible member between said edges, means supporting said arched flexible means for controlling the height of said arched flexible means, said flexible means supporting means including a first elongated stationary recess in said sill for retaining said first elongated edge therein and an elongated movable edge supporting means having a second edge retaining recess therein in spaced relation to said first recess, means for displacing said elongated movable edge supporting means to alter the height of said arched flexible means, said movable elongated



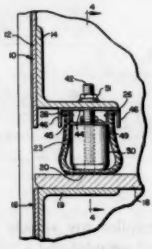
member including a series of blocks, each of said blocks having a recess for retaining said second elongated edge, means for displacing each of said blocks to adjust the height of said flexible member, and an elongated facial plate mounted on said sill adjacent to said series of blocks and said means for displacing each of said blocks.

4,224,767

FIRE STOP SAFETY ASTRAGAL

James M. Jecmen, deceased, late of Indianhead Park, Ill. (by Elinore M. Jecmen, executrix nominee), and John J. Jecmen, Oak Brook, Ill., assignors to Harris Preble Company, Chicago, Ill.

Filed Feb. 27, 1979, Ser. No. 15,759
Int. Cl.² E06B 7/16
U.S. Cl. 49—488 **14 Claims**



1. An astragal for an elevator door, said astragal comprising an elongated boot of flexible fire-resistant material, a mounting channel having upwardly extending vertical flanges, securing means, and door engaging means, said astragal being formed by bending said fire-resistant material lengthwise to form a boot which contacts said vertical flanges of said mounting channel, whereby the edges of said boot extend upwardly and are in substantially continuous contact with the vertical flanges of said mounting channel and secured thereto by said securing means, said door engaging means affixed to said mounting channel and adapted to attach said astragal to said elevator door.

4,224,768

APPARATUS FOR, AND METHOD OF, PLUNGE GRINDING

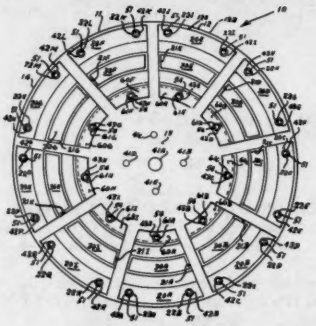
James J. Denney, Carmel, Ind., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 5, 1978, Ser. No. 877,937
Int. Cl.³ B24D 7/06; B24B 1/00
U.S. Cl. 51—209 R **2 Claims**

1. The method of plunge grinding a workpiece to form annular grooves therein by using a chuck plate having plurality

of arcuate-shaped grinding wheel segment holders releasably connected to said chuck plate, wherein each of said segment holders has an arcuate-shaped pocket therein that is defined and limited in part by turned-in edges, and by using a plurality of arcuate-shaped grinding wheel segments that are dimensioned and shaped complementary to, and are to be removably attached to, said arcuate-shaped pockets of said plurality of arcuate-shaped grinding wheel segment holders, comprising the steps of:

a. positioning each one of a plurality of complementarily-shaped and dimensioned grinding wheel segments within



said arcuate-shaped pocket of a different one of said plurality of grinding wheel segment holders;

b. pouring eutectic material, in a liquid state, into each arcuate-shaped pocket of each grinding wheel segment holder;

c. hardening said eutectic material, to a solid state, thereby removably attaching said grinding wheel segments to said grinding wheel segment holders;

d. plunge grinding said workpiece to attain the desired annular grooves in said workpiece;

e. softening said eutectic material to a liquid state;

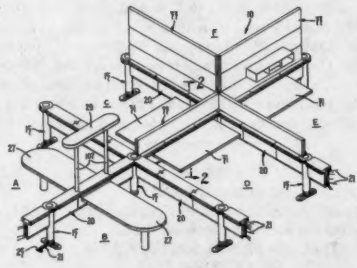
f. and, removing said grinding wheel segments from said wheel segment holders.

4,224,769

SPACE DIVIDER SYSTEM

Douglas C. Ball, Senneville, and Marshall Walker, Waterloo, both of Canada, assignors to Hauserman Limited, Waterloo, Canada

Filed Jun. 12, 1978, Ser. No. 914,713
Int. Cl.[2] E04H 1/00
U.S. Cl. 52—36 **19 Claims**



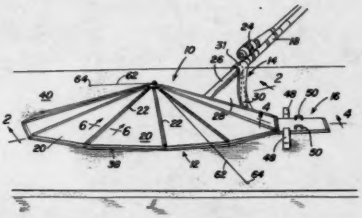
1. In a portable space divider system for dividing office areas into individual task areas, the combination comprising, horizontally disposed beam means, vertical post means disposed at opposite ends of said beam means, means interconnecting said beam means and said post means, said beam means being recessed lengthwise to receive electrical wiring, and said post means and said connecting means being formed to enable passage of said electrical wiring therethrough, said beam means including an I-beam having upper and lower box portions interconnected by a vertical central web portion to define longitudinal side recesses for reception of said wiring, side plates, and means for mounting said side plates to said beams.

4,224,770

OUTDOOR GRAIN PIT COVER

James A. Petty, Wayside, Miss., assignor to Wayside Manufacturing Co., Inc., Wayside, Miss.

Filed Dec. 12, 1978, Ser. No. 968,633
Int. Cl.[2] E04H 7/22
U.S. Cl. 52—82 **10 Claims**



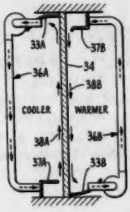
1. A protective rigid cover assembly for used in the underground storage of materials, comprising rigid pit cover means for covering an underground pit and for excluding outside access to the pit and a peripherally mounted sleeve to house feed means for introducing materials into the pit and withdrawing stored materials from the pit, wherein said cover means comprises a generally frusto-conical rigid plate for shedding of rain water, said sleeve comprises an arched peripheral opening to permit access into the pit by said feed means, and said cover assembly is for use in the temporary underground storage of grain.

4,224,771

METHOD AND APPARATUS FOR REDUCING THE RATE OF HEAT TRANSFER

Howard L. Dunsmore, P.O. Box 13651, Reno, Nev. 89507

Filed Jul. 28, 1977, Ser. No. 928,866
Int. Cl.[2] E04B 1/62; E06B 7/02, 7/12
U.S. Cl. 52—171 **64 Claims**



1. Apparatus for reducing the rate of heat transfer across an interface forming a common boundary for a fluid body and another body and which constrains the flow of fluid body across said common boundary interface, comprising

collector means positioned at a side of an expanse of said interface for collecting fluid displaced along said interface by forces acting on said fluid body in the direction of said collector means,

recirculating means for removing the collected fluid from said collection means, and distributor means formed for

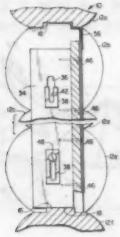
receiving said collected fluid and discharging same at the other side of said expanse of said interface, heat transfer through said interface causing the effect of said forces on the portion of said fluid body adjacent said interface whereby the discharged collected fluid is displaced along said expanse to said collection means.

4,224,772

WINDOW CONSTRUCTION

Robert Bene, Andover, and Joseph A. Fortini, New Haven, both of Conn., assignors to Country Log Homes, Inc., Ashley Falls, Mass.

Filed Oct. 10, 1978, Ser. No. 949,645
Int. Cl.[2] E04B *1/10*
U.S. Cl. 52—233 **9 Claims**



1. A log building having a wall including a plurality of horizontally extending log members arranged in vertically relation and defining a window opening, a window having a frame received within said opening and including at least one window sash supported on said frame for movement relative thereto, said frame including vertically disposed jamb members, vertically elongated wooden connecting strips at least partially disposed within said opening and between said jamb members and said logs defining vertically disposed sides of said opening, said strips having vertically extending apertures formed therein and extending therethrough, inserts having vertically disposed slots and received within said apertures, retaining fasteners attaching said connecting members in fixed position to said frame, and additional fasteners extending through said slots and securing said strips to said wall for vertical movement relative to said wall whereby said window frame is secured to said wall and within said opening to move vertically within said opening and relative to said wall.

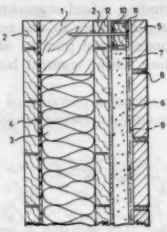
4,224,773

LARGE AREA WALL ELEMENT OF LIGHTWEIGHT SANDWICH DESIGN FOR PREFABRICATED BUILDINGS

Hans Schwörer, Sigmaringen, Fed. Rep. of Germany, assignor to Hans Schworer KG, Sigmaringen, Fed. Rep. of Germany

Filed Jun. 21, 1978, Ser. No. 917,697
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 2729474; Dec. 9, 1977, 2754843
Int. Cl.[3] B44F *7/00*
U.S. Cl. 52—315 **14 Claims**

1. A load-bearing, transportable outer wall of a prefabricated building comprising a panel-like supporting member having an outer continuous surface, and at least four outer layers, said supporting structure and said layers arranged in a sandwich design, the outermost layer comprising at least two weather-proof facing panels, a panel-like layer of foamed plastic, a first adhesive layer located between and adhering the outermost layer to the foamed plastic layer, and a continuous fiberglass matting embedded in said first adhesive layer, such that said matting is located within said first adhesive layer, said foamed plastic layer having its innermost surface glued to the outer continuous surface of the panel-like supporting member by a second adhesive layer, and its outermost surface joined to said continuous fiberglass matting by said first adhesive layer,



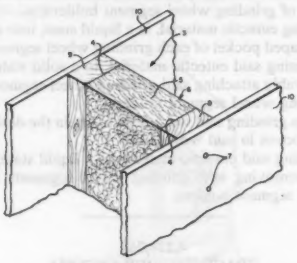
thereby to locate said foamed plastic layer between said supporting member and said matting.

4,224,774

COMPOSITE BUILDING ELEMENTS

Jorgen S. Petersen, Roskilde, Fed. Rep. of Germany, assignor to Rockwool International A/S, Hedenhusene, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 782,876, Mar. 30, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,611
Int. Cl.[2] F04B *1/74*
U.S. Cl. 52—404 **6 Claims**



1. A composite load-bearing structural member for use as studding in the exterior walls of wooden frame buildings comprising:

first and second parallel, spaced, vertically extending wooden stud elements;

and a core of mineral fibre felt having a porosity within the range of from about 0.92 to 0.96 and having the fibres thereof bonded together with a resinous material, said core substantially filling the space between said stud elements and being joined adhesively on the respective opposite faces thereof to corresponding abutting faces of said stud elements, said core having a depth at least as great as the combined depths of said wooden stud elements.

4,224,775

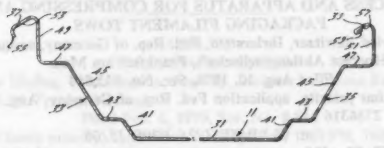
BUILDING PANEL

Robert E. Heckelsberg, Germantown, Tenn., assignor to AMCA International Corporation, Hanover, N.H.

Filed Feb. 6, 1978, Ser. No. 875,532
Int. Cl.[2] E04D *1/00*
U.S. Cl. 52—528 **2 Claims**

1. A building panel comprising an elongated channel having longitudinally extending first and second sidewalls and a longitudinally extending bottom wall extending between the sidewalls, said sidewalls respectively having first and second crimpable edge sections, said first crimpable edge section in-

cluding a first upper rib section and said second crimpable edge section including a first upper rib section, said second crimpable edge section including a second upper rib section, said upper rib sections being substantially parallel to each other and extending substantially perpendicular to a plane defined by said bottom wall and each of which is adapted to abut an upper rib section of an adjacent building panel, the first of said sidewalls having a first flange extending transversely from the top of its upper rib section in a direction inwardly toward the second of said sidewalls and downwardly toward said plane, the second of said sidewalls having a second flange extending transversely from the top of its upper rib section in a direction away from the first of said sidewalls and downwardly toward said plane, said second upper rib section being slightly greater in height with respect to said plane than said first upper rib



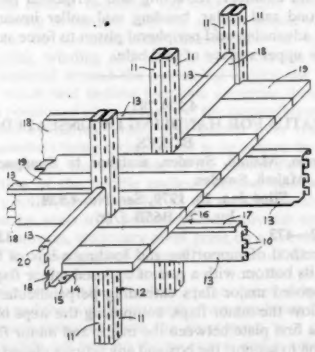
section, said second flange being slightly wider than the first flange, an edge lip positioned on the outward end of said second flange, said edge lip curled downwardly toward said plane and backwardly toward said second of said sidewalls forming therewith a horizontal opening, said horizontal opening being smaller in width than the horizontal width of said first flange such that a second and identical building panel cannot be engaged in an interlocking relationship with said building panel except by rotation when the two panels are positioned side-by-side, each of said sidewalls having a flat rim portion extending inwardly from the bottom of its respective upper rib section, said rim portions lying in a common plane parallel to said bottom wall and each having an unobstructed bottom surface adapted to overlie a supporting shelf portion of an attachment clip.

4,224,776

MEZZANINE SUPPORT BEAM FOR MULTI-STORY HOOK-IN TYPE SHELVING

Peter G. Hammerschlag, Bellevue, Wash., assignor to Easy Up Shelving, Inc., Seattle, Wash.

Filed Feb. 1, 1978, Ser. No. 874,062
Int. Cl.[2] E04H *12/18*
U.S. Cl. 52—645 **3 Claims**



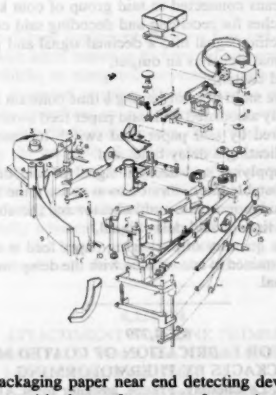
1. A multi-story shelving assembly comprising:
(a) posts having a plurality of openings, said openings spaced from each other along the post;
(b) z-shaped beams having a web portion, a number of projections from said web and spaced apart such that they can be received into the openings of the posts;
(c) flooring panels; said z-shaped beams having an upper and a lower flange spaced apart from each other a distance a whole number times the distance between the openings in the posts, and the hooks such that one z-shaped beam can be hooked into one group of openings in a post, and another z-shaped beam with identical cross-section can be hooked into another group of openings in a post, such that the top surface of the upper flange of one z-shaped beam is at the same horizontal level as the top surface of the lower flange of the other z-shaped beam, allowing support of the flooring panels simultaneously by both the upper flange of the first z-shaped beam and the lower flange of the second z-shaped beam.

4,224,777

PACKAGING PAPER NEAR END DETECTING DEVICE IN COIN PACKAGING MACHINE

Yorizo Miyazaki; Hideshi Sentoku, and Katusuke Furuya, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,271
Claims priority, application Japan, Mar. 13, 1978, 53/28402
Int. Cl.[3] B65B *57/08, 57/18, 11/04*
U.S. Cl. 53—641 **4 Claims**



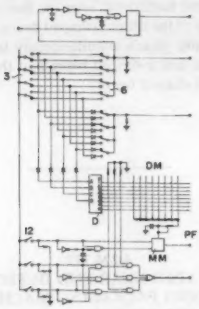
1. A packaging paper near end detecting device for use in connection with the performance of a packaging operation with respect to a roll of packaging paper moving along a path in a coin packaging machine, said packaging paper having a leading end and a packaging length, said device comprising:
a charging stand supporting on its surface said roll of packaging paper,
paper feed rollers provided on the charging stand,
a detecting mechanism for detecting the absence of the packaging paper so as to issue a detection signal provided on the charging stand at a position where the distance along the path of the packaging paper between the detecting mechanism and the leading end of the packaging paper is at least greater than the packaging length of the packaging paper, and
means for stopping the machine after the completion of the packaging operation in response to said detection signal of the detecting mechanism during the packaging operation.

4,224,778

DEVICE FOR SETTING QUANTITY OF PACKAGING PAPER FEED IN A COIN PACKAGING MACHINE

Yorizo Miyazaki; Hideshi Sentoku, and Katusuke Furuya, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,272
Claims priority, application Japan, Mar. 13, 1978, 53/28403
Int. Cl.³ B65B 57/02, 11/04
U.S. Cl. 53—64 4 Claims



1. A device for setting the quantity of packaging paper feed for use in a coin packaging machine, comprising:

a group of coin kind selection switches for issuing a coded coin kind selecting signal in accordance with the coin kind set by the coin kind setting operation for the coin to be packaged,

decoder means connected to said group of coin kind selection switches for receiving and decoding said coded coin kind selecting signal into a decimal signal and providing said decimal signal as an output,

a paper feed switch,

a monostable multivibrator having a time constant and being operatively associated with said paper feed switch so as to be triggered by said paper feed switch to issue a delay signal indicating a delay time, and

means for applying said decimal signal of said decoder to said monostable multivibrator so as to vary the time constant of said monostable multivibrator and thereby to vary the delay time of said delay signal,

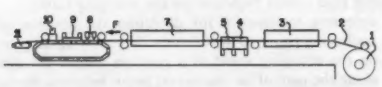
whereby the quantity of packaging paper feed is automatically determined in accordance with the delay time of said delay signal.

4,224,779

METHOD FOR FABRICATION OF COATED METAL PACKAGES BY THERMOFORMING

Robert Guedet, Le Chesnay, France, assignor to SCAL Societe de Conditionnements en Aluminium, Paris, France

Filed Sep. 22, 1978, Ser. No. 945,060
Claims priority, application France, Sep. 23, 1977, 77 29408
Int. Cl.³ B65B 55/06, 47/02
U.S. Cl. 53—426 8 Claims



1. A process for the continuous packaging under sterile conditions of a consumable product in metal containers, comprising the steps of:

continuously thermoforming containers from metal blanks formed of aluminum having a thickness of from 0.10 to 0.50 mm, the blanks being covered with a layer of artifical alumina, the thermoforming temperature being sufficient to sterilize the containers thus formed;

maintaining the sterile thermoformed containers thus formed under sterile conditions subsequent to thermoforming and at least prior to and during subsequent continuous flow process operations; and

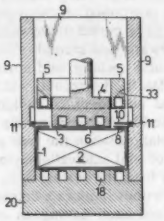
filling the sterile containers with the consumable product in a continuous flow process which includes sterile formation of the containers by thermoforming, the containers being maintained under sterile conditions during filling to assure packaging under aseptic conditions.

4,224,780

PROCESS AND APPARATUS FOR COMPRESSING AND PACKAGING FILAMENT TOWS

Siegfried Rewitzer, Ihrlerstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main

Filed Aug. 10, 1978, Ser. No. 932,614
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736316
Int. Cl.³ B65B 1/24; B30B 15/06
U.S. Cl. 53—436 10 Claims



1. A process for making a compressed bale of a filament tow encased in a flexible sheet packaging material by compressing a mass of said tow in a baling press having a pressure chamber and a reciprocating composite ram in said chamber, said ram comprising a central piston and a relatively movable peripheral piston, said process comprising the steps of positioning in said pressure chamber a partially compressed mass of said tow encased in said sheet packaging material, advancing said ram to compress said bale and form a collar of said packaging material between the periphery of said ram and the internal surface of said pressure chamber, retracting said peripheral piston to a point beyond said collar, bending said collar inwardly and thereafter advancing said peripheral piston to force said collar against the upper surface of said bale.

4,224,781

APPARATUS FOR HANDLING OF UNSEALED SLIT BOXES

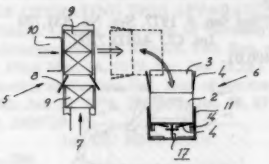
Sten Salenbo, Malmö, Sweden, assignor to Sundpacma Aktiebolag, Malmö, Sweden

Filed Jan. 18, 1979, Ser. No. 4,538
Int. Cl.³ B65B 5/06
U.S. Cl. 53—473 13 Claims

12. A method of supporting and loading a box of the type formed at its bottom with a pair of opposed minor flaps and a pair of opposed major flaps extending perpendicular to and located below the minor flaps, comprising the steps of:

placing a first plate between the major and minor flaps in a position to support the box and any articles placed therein, with the major flaps turned in towards the minor flaps but cutside of the first plate, engaging the outer side of the major flaps with a second plate to prevent outward movement of the major flaps and thereby prevent movement of the box away from the first plate,

and with the two plates thus positioned relative to the box, moving the entire box and the plates to a different position



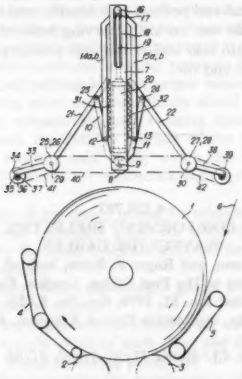
or orientation and loading the box at said different position or orientation.

4,224,782

WRAPPING MACHINE

Per Moflag, Sandnessjoen, Norway, assignor to Thune-Eureka A/S, Tranby, Norway

Filed Feb. 6, 1979, Ser. No. 9,814
Claims priority, application Norway, Feb. 16, 1978, 780535
Int. Cl.³ B65B *11/04*
U.S. Cl. 53—587 **6 Claims**



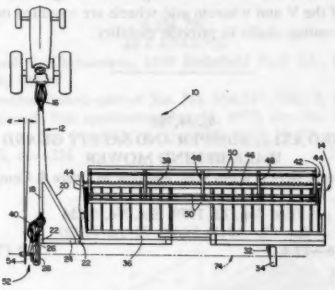
1. In a wrapping machine in which a length of packing material is wound around a cylindrical object, said apparatus comprising endless members led over rollers, said endless members being in contact with the applied length of packing material in the circumferential direction of the cylindrical object during winding and serving to tighten the length of packing material around the cylindrical object; the improvement in which said endless members comprise three endless members positioned consecutively in the circumferential direction of the cylindrical object and guided over rollers, said endless members being spring-biased to lie against the length of packing material, the inner side of the outwardly-facing running section of the middle endless member passing over a stationary roller, the rollers for all the endless members being supported by arms in a power-operated pivotal arm system having a common, stationary pivot point on a line through the center of the cylindrical object and the center of the stationary roller, two pivot arms extending out from the pivot point, symmetrically about the line through the center of the cylindrical object and the pivot point, each pivot arm being articulated at a distance removed from the pivot point to a guide arm which extends out beyond the pivot arm and is articulated to the guide arm for the other pivot arm at a hinge coupling on said line, such that a quadrilateral linkage is formed in which the hinge coupling for the guide arms can be moved toward and away from the pivot point, each pivot arm at a distance removed from the pivot point being articulated to a first support arm, a roller for the middle endless member and for one of the two outer endless members rotatably supported on each said first support arm, a second support arm articulated to each said first support arm and limitedly pivotal about the center of rotation of each roller, a roller for the outer endless member rotatably supported at the end of each said second support arm, and drive means for moving the hinge coupling for the guide arms toward and away from the pivot point.

4,224,783

SIDE DRAFT STABILIZER

Kenneth L. Kirkpatrick; Dalton H. Spicer, both of Welland, and Ken K. Oka, St. Catherines, all of Canada, assignors to Deere & Company, Moline, Ill.

Filed Dec. 4, 1978, Ser. No. 966,029
Int. Cl.³ A01D *73/00*
U.S. Cl. 56—13.5 **8 Claims**



1. In a pull-type implement having a fore-and-aft extending drawbar with hitch means at its forward end connectible to a traction vehicle; an elongated harvesting unit having one end fixed to a rearward portion of said drawbar and extending transversely therefrom to one side of said vehicle; ground wheels carrying the harvesting unit, one wheel adjacent to and supporting the one end of said harvesting unit and having a substantial transversely extending axis of revolution; and a side draft stabilizing means carried by the implement said stabilizing means being generally adjacent to said axis of revolution and generally adjacent to a fore-and-aft line extending rearwardly from the hitch means, said stabilizing means further including a vertically shiftable ground-penetrating member.

4,224,784

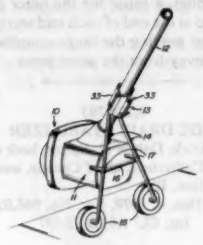
ATTACHMENT FOR LINE TRIMMER

Lee A. Hansen, 712 N. Piedra, and William A. Conrad, 1844 N. Piedra, both of Sanger, Calif. 93657

Filed Jun. 14, 1978, Ser. No. 915,358
Int. Cl.³ A01G *3/06*
U.S. Cl. 56—16.9 **4 Claims**

1. An attachment for converting a line trimmer into an edge trimmer comprising: a mounting collar, two legs for attachment to said mounting collar, each leg having fixedly, rotatably mounted to one end thereof a wheel, and a bracing bar firmly attached to the central portion of each of said legs, and further wherein said two legs each comprise a long shaft of circular cross section which has three portions, a main shaft, a wheel mounting shaft which extends from one end of the main shaft at a 90 degree angle thereto, and a mounting shaft which extends from the opposite end of the main shaft at an obtuse angle thereto and a bracing bar of U-shaped configuration securely attached to the center portion of each of said support legs with the ends of said U being parallel with said wheel mounting shafts and disposed in a generally opposite direction to said mounting shafts and also wherein the mounting shafts

are parallel to each other, and the wheel mounting shafts are parallel to each other, and such that the main shafts generally form a V-shape with each other with the ends of the support



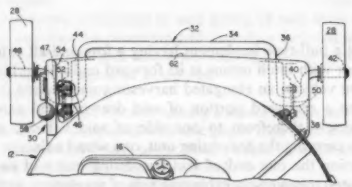
legs attached to the wheel mounting shafts being in the wider portion of the V and wherein said wheels are mounted on said wheel mounting shafts to provide mobility.

4,224,785

COMBINED AXLE, BUMPER AND SAFETY GUARD FOR WALK-BEHIND MOWER

John J. Hoch, Beaver Dam, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 22, 1979, Ser. No. 5,134
Int. Cl.[3] A01D *53/00, 75/18, 75/20*
U.S. Cl. 56—17.4 **2 Claims**



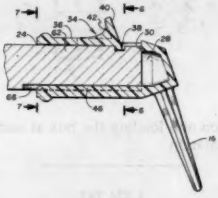
1. In a walk-behind lawn mower including a mower blade housing supported on front and rear sets of vertically adjustable wheels an improved front wheel support, comprising: a unitary rod having right and left transversely spaced mounting portions pivotally mounted in transversely spaced forward end portions of the blade housing such as to define a transverse axis about which the front set of wheels are vertically pivotally swingable to effect their vertical adjustment relative to the housing; said unitary rod including a central U-shaped portion having opposite ends extending orthogonal to and respectively joined to inner ends of the right and left mounting portions; said mounting rod further including right and left crank portions extending orthogonally to and respectively being joined to outer ends of the right and left mounting portions, the right and left crank portions respectively terminating in out-turned right and left ends; said front set of wheels consisting of right and left wheels journalled for rotation on the right and left ends; adjustment-effecting means coupled between the housing and the rod for rotating and releasably holding the rod in various positions to thereby effect vertical adjustment of the right and left wheels relative to the housing to vary the cutting height of the mower; and said U-shaped portion of the rod being dimensioned such that it extends forwardly beyond the front of the housing in at least those positions of the rod for effecting low cutting heights whereby the U-shaped portion of the rod serves as a bumper to protect the housing from striking foreign objects.

4,224,786

HAND TOOL WITH READILY DETACHABLE HANDLE

Howard Langlie, and Albert T. Berg, Jr., both of Ellendale, Minn. 56026

Filed Sep. 9, 1977, Ser. No. 831,734
Int. Cl.[2] A01D *7/00*
U.S. Cl. 56—400.01 **11 Claims**



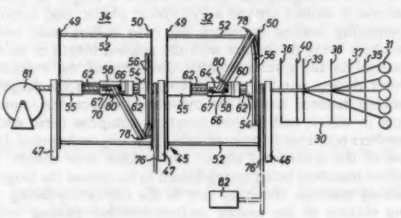
1. In combination with a hand tool, means forming a generally cylindrical socket connected to said tool, said means having an opening at one end for permitting the insertion of a generally cylindrical end portion of an elongated handle into said socket and a plurality of resilient sawtooth splines integral with said means, said sawtooth splines projecting into said socket for flexibly and releasably engaging a segmental surface of the cylindrical end portion of a handle, said socket means including at least one inwardly curving resilient longitudinal rib extending into said socket and said plurality of sawtooth splines being on said rib.

4,224,787

APPARATUS FOR FORMING DIELECTRIC OPTICAL WAVEGUIDE CABLES

Lynden A. Jackson, and Roger J. Bates, both of Ipswich, England, assignors to The Post Office, London, England

Filed Jan. 31, 1979, Ser. No. 8,052
Claims priority, application United Kingdom, Feb. 1, 1978, 4109/78
Int. Cl.[3] B65H *77/00, 81/06, 81/08*
U.S. Cl. 57—15 **8 Claims**



1. Apparatus for winding tape around an elongate core comprising a frame structure rotatable about an axis, said structure defining an axially extending passage for said core to pass along, a bobbin carried by structure and mounted so as to be rotatable about the path of said core, means for mounting a reel of tape on said structure and means for guiding tape from said reel to said bobbin, said bobbin including a pair of spaced sensors between which the tape is arranged to pass, said sensors being connected to control circuitry for drive means for said frame structure, said control circuitry being operative to control the drive means such that the tape is maintained between the sensors.

4,224,788

APPARATUS FOR SZ TWISTING TWIST ELEMENTS OF ELECTRIC CABLES AND LINES AS WELL AS METHOD OF OPERATING THIS APPARATUS

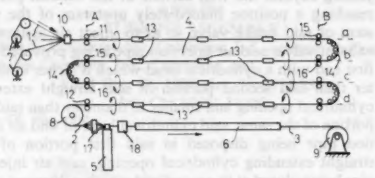
Dieter Vogelsberg, Coburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,181

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2813491; Jul. 28, 1978, 2833698; Jul. 28, 1978, 2833701; Jan. 8, 1979, 2900729

Int. Cl.[3] H01B *13/04*

U.S. Cl. 57—294 22 Claims



1. In apparatus for SZ twisting twist elements of electric cables and lines by means of an accumulator which is arranged between a stationary unwind device for the twist elements and a pull-off and take-up device for the twisted material and which includes a first twisting point arranged at the entrance of the accumulator, a second twisting point at the exit of the accumulator and twisting heads arranged immediately behind the first twisting point and immediately ahead of the second twisting point, respectively, said twisting heads rotatable at changing speeds, the axes of rotation of the twisting heads lying on the twisting axis, along which the twist elements assembled into a strand are conducted, the improvement comprising:

(a) a plurality of stationary guides for straight guidance and at least one stationary guide for deflecting the strand formed by the twist elements disposed between the two twisting heads;

(b) said twisting heads and straight guides arranged equiaxially in different planes;

(c) a guide for deflecting the strand being arranged between the last straight guide of each plane and the first straight guide of a next following plane, and

(d) means for preventing the development of friction forces between said straight guides and said twist elements.

4,224,789

ELECTRONIC TIMEPIECE

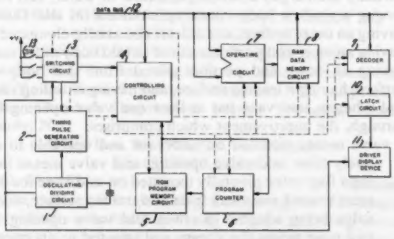
Seiko Sasaki, and Kazuhiro Asano, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 16, 1978, Ser. No. 906,562

Claims priority, application Japan, May 20, 1977, 52-58387

Int. Cl.[2] G04B *19/24, 27/00*

U.S. Cl. 368—185 3 Claims



1. A circuit for an electronic timepiece comprising: a data memory circuit which stores time information and display information; operating circuit means which renews data stored in said data memory circuit; a display means having a decoder circuit, a latch circuit and a driver circuit for displaying renewed data; control circuit means for generating control signals supplied to said data memory circuit, said operating circuit and said display means; a program memory circuit which stores a sequential program of said control signals; a program counter for carrying out said program stored in said program memory circuit; a timing pulse generating circuit which supplies timing pulses to said control circuit means, said program memory circuit, said program counter, said operating circuit means, said data memory circuit and said decoder for operating each said circuit; an oscillating and dividing circuit which supplies standard pulses to said timing pulse generating circuit; and a switching circuit which is connected to switches operable for applying switching signals to operate said control circuit means.

4,224,790

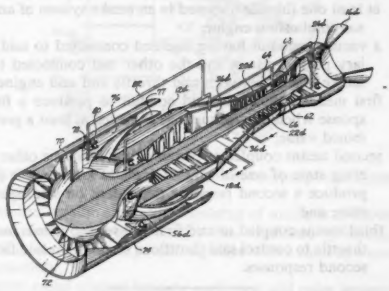
JET ENGINE

Raymond G. Christensen, 1348 Bellefield Park Ln., Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 664,317, May 5, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,902

Int. Cl.[2] F02C *1/02;* F02K *3/02, 11/02*

U.S. Cl. 60—224 23 Claims



1. A jet engine particularly adapted for use in an aircraft traveling at high supersonic or hypersonic velocities, said engine comprising:

a. a housing structure having an upstream inlet end to receive intake air and a downstream exhaust end to discharge jet exhaust,

b. a supersonic inlet arranged to receive air and reduce said air to a subsonic velocity,

c. a subsonic turbine mounted rearwardly of said inlet and arranged to be driven by subsonic air from the inlet, with the air expanding as it passes through said turbine,

d. a compressor mounted in the housing downstream of the turbine to compress air discharged from the turbine, said compressor having a drive connection to the turbine so as to be driven thereby,

e. said housing comprising means defining a combustion chamber located downstream of said compressor to react a fuel/air mixture and direct the resulting combustion products through the discharge end of the housing,

f. said housing further defining a heat exchange zone located upstream of the compressor and downstream of the turbine to receive air discharged from the compressor,

g. air cooling heat exchange and injecting means to place fuel for the engine in heat exchange relationship with air in the heat exchange zone to lower the temperature of the air and to inject said fuel into air passing through the engine for combustion therewith in the combustion zone.

4,224,791
ARRANGEMENT FOR GENERATING AND MAKING AVAILABLE A VACUUM FOR VEHICULAR AUXILIARY POWER SYSTEMS

Fritz Ostwald, Buchschlag, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,411

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814384

Int. Cl.³ B60K *41/20*

U.S. Cl. 60—397 **9 Claims**

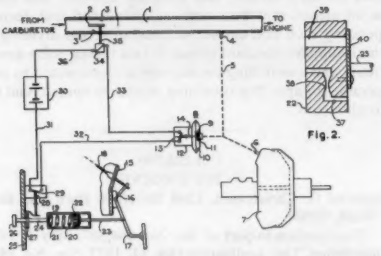


Fig. 2.

1. An arrangement for generating and making available a vacuum for an auxiliary power system of a vehicle comprising:

at least one throttle disposed in an intake system of an internal combustion engine;

a vacuum conduit having one end connected to said auxiliary power system and the other end connected to said intake system between said throttle and said engine;

first means coupled to said conduit to produce a first response when the vacuum has achieved at least a predetermined value;

second means coupled to respond to at least one other operating state of one of said engine and said vehicle and to produce a second response dependent on said operating state; and

third means coupled to said first and second means and said throttle to control said throttle in response to said first and second responses.

4,224,792
INTERNAL COMBUSTION ENGINE EQUIPPED WITH AN IMPROVED AIR INJECTION SYSTEM

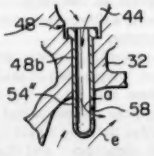
Yoshimasa Hayashi, and Shin-ichi Nagumo, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 744,794, Nov. 24, 1976. This application Apr. 12, 1978, Ser. No. 895,793

Claims priority, application Japan, Dec. 12, 1975, 50-168693[U]

Int. Cl.³ F01N *3/10*

U.S. Cl. 60—305 **6 Claims**



1. An internal combustion engine having a cylinder head defining the combustion chamber and forming therein an exhaust port communicating with the combustion chamber comprising: an exhaust valve having a valve stem, through which the combustion chamber is communicable with the exhaust port; means for defining an air gallery in the cylinder head, said air gallery being connected to an air source for supplying air under pressure into said air gallery;

means for defining a straight extending cylindrical opening connecting said air gallery and the exhaust port, and including a first portion communicating with said air gallery and openable outside of the cylinder head, and a second portion opened at one end thereof to the first portion and smaller than said first portion and openable at the other end thereof to the exhaust port; and

an air injection pipe securely disposed in said straight extending cylindrical opening, said air injection pipe projecting beyond the wall surface of the exhaust port and reaching a position immediately upstream of the valve stem of said intake valve so as to inject air against said exhaust valve, said air injection pipe being provided at its first end with a cylindrical head which is larger in diameter than said second portion of said straight extending cylindrical opening and smaller in diameter than said first portion of the same, said cylindrical head of said air injection pipe being disposed in said first portion of said straight extending cylindrical opening, said air injection pipe being closed at its second end which is disposed in the exhaust port and having an air injection opening formed through the cylindrical wall thereof to communicate the inside of the air injection pipe with the exhaust port, said air injection opening being located apart from the second end thereof and so formed that air under pressure in the air injection pipe is injected into the exhaust port in the substantially same direction as of the exhaust gases discharged from the combustion chamber and flowing through the exhaust port.

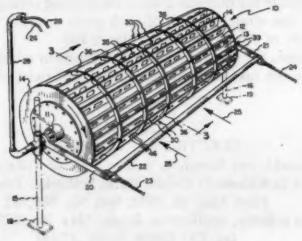
4,224,793
STREAM-POWERED TURBINE VANES

Anton F. Gutsfeld, 13 London St. North, Hamilton, Ontario,, Canada (L8H 4B2)

Continuation-in-part of Ser. No. 680,684, Apr. 27, 1976, Pat. No. 4,104,536. This application Jul. 9, 1979, Ser. No. 55,892

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—398 **5 Claims**



1. In a stream-powered turbine adapted to be restrained in a partially submerged condition in a flow of water, said turbine having a shaft, a body rotatably mounted on said shaft and having an outer surface, and at least one axially-elongated vane having an inner end portion secured to said body outer surface, having an outer end portion spaced from said body outer surface, having a leading surface, and having a trailing surface, and wherein said vane has at least one valve opening therethrough, the improvement which comprises:

valve means mounted on said vane and operable to selectively close said valve opening, said valve means including a flap valve pivotally mounted on said vane for movement toward and away from said trailing surface, said flap valve being adapted to cover said valve opening when said vane enters the stream and adapted to uncover said valve opening when said vane exits said stream; and

shield means mounted on said vane outer end portion and

extending away from said vane trailing surface to form a dam-like member over which water must normally pass to contact said vane trailing surface, said shield means having at least one control opening therethrough aligned with said flap valve;

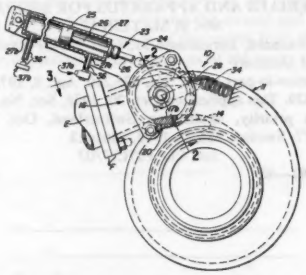
whereby, when said turnbine rotates to cause said vane to enter the stream, water may pass through said control opening to cause said flap valve to cover said valve opening to insure that said valve opening will be closed when the pressure of said flow is applied to said vane trailing surface.

4,224,794

TURBINE ASSEMBLY

William E. Woollenweber, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 28, 1978, Ser. No. 973,738
Int. Cl.³ F02B *37/00*
U.S. Cl. 60—602 **11 Claims**



1. A turbine assembly for use on an internal combustion engine having an intake manifold and an exhaust manifold, said assembly comprising a housing having a chamber in which a turbine wheel is rotatably mounted, said housing chamber being provided with an exhaust gas entry and an exhaust gas exit; a hollow section disposed upstream of said housing chamber and having an inlet for communicating with the exhaust manifold, an outlet communicating with the chamber entry, and a bypass passageway having one end thereof connected to said hollow section intermediate said inlet and outlet, and a second end thereof terminating downstream of said gas exit; and a rotor mounted within said hollow section for movement between selected positions of adjustment, said rotor, when in a first selected position of adjustment, effecting substantially unrestricted exhaust gas flow from the exhaust manifold to the housing chamber through the hollow section; and when said rotor is disposed in a second selected position of adjustment, a predetermined amount of the exhaust gas flow is diverted through the bypass passageway while the remainder thereof passes through the hollow section to the housing chamber.

4,224,795

METHOD FOR CONVERTING HEAT ENERGY TO MECHANICAL ENERGY WITH MONOCHLOROTETRAFLUOROETHANE

Leonard I. Stiel, Williamsville; Robert A. Allen, Kenmore, both of N.Y., and Kevin P. Murphy, Gladstone, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 26, 1978, Ser. No. 973,210
Int. Cl.³ F01K *25/06*
U.S. Cl. 60—651 **6 Claims**

1. The method for converting heat energy to mechanical energy which comprises vaporizing a fluid comprising monochlorotetrafluoroethane by passing the same in heat exchange relationship with a heat source and utilizing the kinetic energy of the resulting expanding vapors to perform work.

4,224,796

METHOD FOR CONVERTING HEAT ENERGY TO MECHANICAL ENERGY WITH 1,2-DICHLORO-1,1-DIFLUOROETHANE

Leonard I. Stiel, Williamsville, and Chien C. Li, Amherst, both of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 26, 1978, Ser. No. 973,269
Int. Cl.³ F01K *25/06*
U.S. Cl. 60—651 **6 Claims**

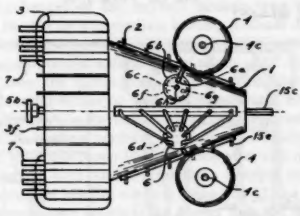
1. The method for converting heat energy to mechanical energy which comprises vaporizing a fluid comprising 1,2-dichloro-1,1-difluoroethane by passing the same in heat exchange relationship with a heat source and utilizing the kinetic energy of the resulting expanding vapors to perform work.

4,224,797

VARIABLE SPEED, CONDENSING STEAM TURBINE AND POWER SYSTEM

Donald A. Kelly, 58-06 69th Pl., Maspeth, N.Y. 11378

Filed May 9, 1977, Ser. No. 795,323
Int. Cl.² F01K *13/02*
U.S. Cl. 60—652 **10 Claims**



1. A variable speed condensing steam turbine power system comprising

a conical turbine expander consisting of multiple uniformly increasing diameter flat rotor discs separated by identical diameter core discs joined together with a shaft as a rotor assembly,

a sheet metal conical housing enclosing said rotor assembly by means of a small end disc-plate at one end and a large end disc-plate at the opposite end,

bearings and seals axially disposed within said small and large end disc-plates,

multiple short tubing connections uniformly located along the full length of said sheet metal conical housing being disposed nearly tangentially to the outer diameters of said flat rotor discs,

multiple canted radial slots uniformly disposed within said large end disc plate,

joining and sealing of an expansion condenser housing to said large end disc-plate, a uniformly varying pitch helical condensing element disposed within said expansion condenser housing, multiple radial flat fins disposed around the outer and front surfaces of said expansion condenser housing,

multiple horizontal heat pipes uniformly arrayed around the front face of said expansion condenser housing, a combination centrifugal blower/fan axially secured to the shaft of said rotor assembly disposed within the cavity formed by said expansion condenser housing,

a condensate tube outlet disposed at the bottom of said expansion condenser housing,

a rotary water pump connected to said condensate tube outlet at the bottom of said expansion condenser housing, a pulley and belt drive connecting said rotary water pump with the shaft of said rotor assembly,

multiple vapor generators disposed adjacent to the small diameter end of said conical turbine expander on vertical

axes, said multiple vapor generators comprised of multiple uniform horizontal tubing coils,

insulated ring housings centrally disposed over and supporting each of said multiple uniform horizontal tubing coils,

central vertical elongate fuel burners centrally disposed within each of said multiple uniform horizontal tubing coils,

tubing connection means from said rotary water pump to each of said multiple vapor generators, tubing connection means from the top of said multiple vapor generators to multiple rotary selector valves,

said rotary selector valves have a single steam entrance port and about eight outlet ports, a revolving disc with a single port and central shaft disposed within said rotary selector valves,

tubing connection means from said multiple rotary selector valves to each of said multiple short tubing connections on said sheet metal conical housing.

4,224,798

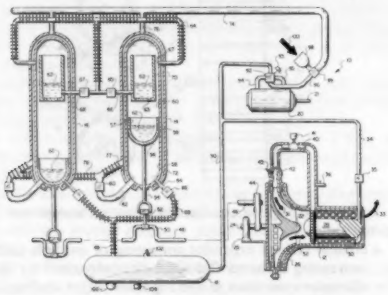
SPLIT CYCLE ENGINE AND METHOD

VerDon C. Brinkerhoff, 917 Park Row, Salt Lake City, Utah 84105

Continuation-in-part of Ser. No. 904,562, May 10, 1978, abandoned. This application Jul. 5, 1979, Ser. No. 54,751

Int. Cl.³ F01K *3/00*

U.S. Cl. 60—652 **14 Claims**



14. A method for converting thermal energy into mechanical energy comprising:

generating mechanical energy in a combustion engine and producing a first mechanical energy;

operating an air compressor means with the first mechanical energy to compress air;

assisting the first mechanical energy in compressing the air by removing heat energy from the air with a refrigerant, the refrigerant being volatilized by heat energy from the air and thereby increasing in pressure and assisting the first mechanical energy in compressing the air; and

producing a second mechanical energy with a pneumatic motor means by directing the compressed air to the pneumatic motor means.

4,224,799

GAS-OPERATED MOTOR SYSTEMS

John W. Rilett, 18 Links View, Stratton, Cirencester, Gloucestershire, England

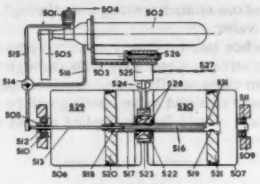
Filed Jul. 17, 1978, Ser. No. 925,398

Claims priority, application United Kingdom, Jul. 16, 1977, 29987/77

Int. Cl.³ F01K *25/10*

U.S. Cl. 60—671 **10 Claims**

1. A fluid pressure operated motor system comprising: a fluid pressure operated motor; a reservoir vessel adapted to contain pressurized fluid; a passage for the supply of pressure fluid from said vessel to a working chamber of the motor; a container holding a buffer substance in heat exchange relationship with said pressure fluid; an exhaust chamber arranged to receive the pressure fluid exhausted from the motor during



operation thereof; and means for recompressing the exhaust from said exhaust chamber back into the reservoir vessel when said motor is not performing a work output function.

4,224,800

PROCESS FOR SAFE UNDERGROUND STORAGE OF MATERIALS AND APPARATUS FOR STORAGE OF SUCH MATERIALS

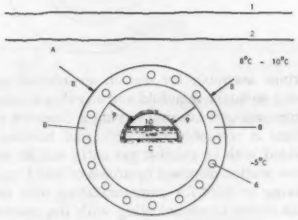
Alf H. Grennard, Bergstrasse 21, 6101 Nieder-Ramstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 675,210, Apr. 8, 1976, Pat. No. 4,121,429. This application Oct. 20, 1978, Ser. No. 954,293

Claims priority, application Switzerland, Oct. 24, 1977, 013108/77; Sweden, Feb. 7, 1978, 7801413

Int. Cl.² F17C *7/02*

U.S. Cl. 62—45 **45 Claims**



1. A method for the formation and operation of a safe storage area to hold cryogenic material, said storage area being in the form of an underground storage cavern in a solid formation, said stored material is maintained at a different temperature from the natural temperature of the environs surrounding the wall, floor, and the ceiling of said storage cavern, said process including the steps of: arranging on the outside of said storage cavern, with insulation, an inner first circulation system surrounding said cavern; providing said circulation system with a plurality of channels regularly distributed around the cavern and near its surface and when working in rock by rock bore holes to be drilled between a first inner system for surrounding tunnels; these tunnels being parallel to the axis of the storage space, to thereby define tunnels and channels enclosing and surrounding the cavern; arranging a second outer circulation system further away from said cavern, on the outside of and in working relation to the first inner circulation system by providing a plurality of regularly distributed channels, said channels being formed between a second outer system of surrounding tunnels, forming said tunnels in parallel to the axis of the storage space and together with said last mentioned channels to enclose the cavern and the inner circulation system; introducing into the first inner circulation system a circulating heat exchange medium for exchanging heat between the circulating medium and the surroundings, around the first inner circulation system; introducing into the second outer circulation system a circulating heat exchange medium for exchang-

ing heat between the circulating medium and the surroundings around the second outer circulation system; heating the surroundings of said first inner circulation system and by heat exchange causing its walls, floor, and ceiling of the cavern to remain at a predetermined temperature above a temperature of stored materials forming a temperature barrier envelope about said cavern; reducing the ice sublimation rate at said cavern by operating one or both circulation systems below 0° C. when said cryogenic materials stored in said cavern is at a temperature below 0° C.; absorbing and removing sublimed water vapor from ice and water in the area of said first inner circulation system by said heat exchange and drying medium in the inner circulation system; cooling the environment of the outer circulation system through recirculation with a gas, preferably with cool air, introduced therein during an initial period, and during a later period, when required, with other cool gases; maintaining the temperature of these heat exchange media below 0° C. to form a frozen zone around the outer circulation system; freezing water in the rock in proximity to the area of said cavern and around the outer circulation system simultaneously affecting the slope and the level of the temperature gradients in a desired manner around the cavern and halting liquid water flow in the direction of the cavern from the environs, preserving natural imperviousness of the rock.

4,224,801

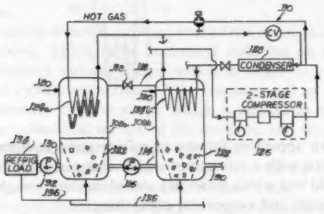
STORED CRYOGENIC REFRIGERATION

Lewis Tyree, Jr., 145 Briarwood Ave., N., Oak Brook, Ill. 60521

Continuation-in-part of Ser. No. 737,440, Nov. 1, 1976, Pat. No. 4,127,008. This application Nov. 13, 1978, Ser. No. 959,891

Int. Cl.[2] F17C 7/02

U.S. Cl. 62—48 **31 Claims**



1. A method of refrigerating material using stored cryogenic refrigeration, which method comprises

creating a reservoir of solid and liquid cryogen in chamber means by maintaining a temperature and a pressure at about the triple point of said cryogen where solid, liquid and vapor cryogen exist in equilibrium,

separating liquid cryogen from solid cryogen in said reservoir and removing said separated liquid cryogen from said chamber means,

circulating said removed liquid cryogen to heat-exchange means where it absorbs heat from said material being refrigerated and vaporizes, and

returning said cryogen from said heat-exchange means to said chamber means where said absorbed heat is given up by melting said solid cryogen.

4,224,802

APPARATUS AND PROCESS FOR VAPORIZING LIQUEFIED NATURAL GAS

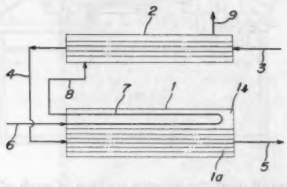
Isami Ooka, Osaka, Japan, assignor to Osaka Gas Company, Limited, Japan

Filed Mar. 28, 1979, Ser. No. 24,535

Claims priority, application Japan, Mar. 28, 1978, 53/36401; Mar. 28, 1978, 53/36402

Int. Cl.[3] F17C 7/02

U.S. Cl. 62—52 **24 Claims**



1. Apparatus for vaporizing liquefied natural gas and heating the vaporized gas to a temperature suitable for use with estuarine water or warm effluent water as the heat source comprising:

(i) a heat exchanger of the indirect heating type having enclosed therein an intermediate heating medium divided into a lower liquid portion and an upper vapor portion for producing varporized natural gas of about −30° to about −50° C. from the liqufied natural gas, an inlet for introducing estuarine water or warm effluent water into said lower liquid portion for indirect heat exchange with said intermediate heating medium, an outlet for discharging the water from said lower liquid portion after said indirect heat exchange with said intermediate heating medium, said intermediate heating medium being heated to a vaporization temperature which is not higher than the freezing point of said water by said indirect heat exchange therewith in said lower liquid portion, the vaporized intermediate heating medium passing to said upper vapor portion, an inlet for introducing liquid natural gas into said upper vapor portion for indirect heat exchange with the vaporized intermediate heat exchange medium to vaporize said liquid natural gas, and an outlet for discharge of vaporized natural gas, and

(ii) a multitubular heat exchanger for heating the vaporized gas from the first heat exchanger to a temperature suitable for use by heat exchange between the gas and estuarine water or warm effluent water, the heat exchanger having an inlet and an outlet for the gas and an inlet and an outlet for the water, the gas inlet being in fluid communication with the gas outlet of the first heat exchanger and the water outlet being in fluid communication with the water inlet of the first heat exchanger.

4,224,803

CHEMICAL HEAT PUMP

Leonard Greiner, 2750-C Segerstrom Ave., Santa Ana, Calif. 92704

Continuation-in-part of Ser. No. 842,702, Oct. 17, 1977. This application Nov. 7, 1978, Ser. No. 958,507

Int. Cl.[3] F25B 17/08, 27/00

U.S. Cl. 62—106 **6 Claims**

1. A vapor absorption heat pump, comprising:

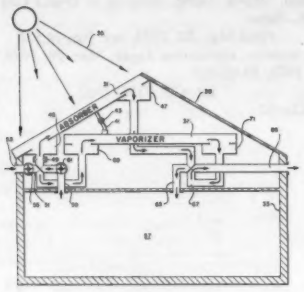
vaporizing means storing a liquid to be vaporized;

wicking means in said vaporizer means, said wicking means for uniformly distributing moisture in said vaporizer means;

a chemical absorber container storing a layer of vapor absorptive chemical; and

a vapor conduit communicating between said vaporizer means and said absorber container;

said vaporizer means comprising a plurality of cylindrical glass tubes and said wicking means comprising a layer of



glass wool over the interior surface of each of said plurality of tube, and further comprising an air conduit around each of said plurality of glass tubes.

4,224,804

HOT-WATER SUPPLY FOR SUBMARINES AND THE LIKE

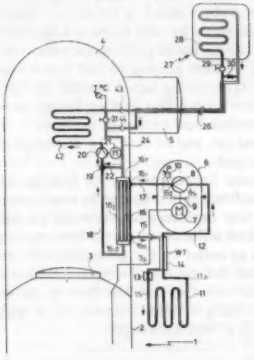
Jörg Haas, Karlsruhe, Fed. Rep. of Germany, assignor to Bruker-Physik AG, Rheinstetten-Forchheim Am-Silberstreifen, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,611

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801534

Int. Cl.³ F25B *27/02;* **B63H** *25/26;* **F25D** *23/12;* **B63C** *11/46*

U.S. Cl. 62—238 **12 Claims**



1. A heating system supplying heated water in an underwater environment, the heating system comprising:

(a) a water-tight submersible housing;

(b) an electric motor located within the submersible housing;

(c) conductive means for connecting the motor to electric storage batteries to transmit electric power to the motor;

(d) a compressor located within the submersible housing, the compressor having a low-pressure suction inlet and a high-pressure discharge outlet, the compressor being adapted to compress a heating-medium fluid;

(e) drive coupling means connected between the motor and the compressor for transmitting motive power from the motor to the compressor;

(f) an evaporator heat exchanger having a heating-medium inlet and a heating-medium outlet, the heating-medium outlet being connected to the suction inlet of the compressor, the submersible housing having at least one sealed port opening permitting the evaporator heat exchanger to communicate with surrounding water outside of the housing so that the heat exchanger makes thermal contact with the surrounding water to absorb heat from the water when the submersible housing is submerged;

(g) a throttle valve having a high-pressure inlet and a low-pressure outlet, the low pressure outlet being connected to the heating-medium inlet of the evaporator heat exchanger; and

(h) a condenser heat exchanger, the condenser heat exchanger having a heating-medium inlet and a heating-medium outlet, the heating-medium inlet being connected to the discharge outlet of the compressor and the heating-medium outlet being connected to the high-pressure inlet of the throttle valve, the condenser heat exchanger further having a cooled-water return inlet and a heated-water discharge outlet so that water can be caused to flow through the heat exchanger to absorb heat from a heating-medium fluid passing through the heat exchanger.

4,224,805

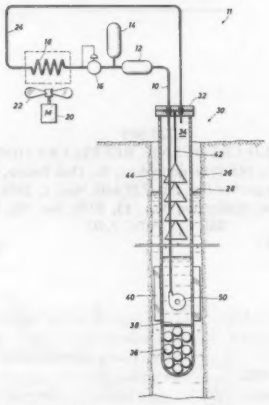
SUBTERRANEAN HEAT EXCHANGER FOR REFRIGERATION AIR CONDITIONING EQUIPMENT

H. Richard Rothwell, 6155 Real St., Groves, Tex. 77619

Filed Oct. 10, 1978, Ser. No. 949,676

Int. Cl.³ F25D *23/12;* **F25B** *27/02, 13/00*

U.S. Cl. 62—260 **7 Claims**



1. An apparatus for use in refrigeration equipment which functions with a refrigerant which changes phase from vapor to liquid and which flows in a closed circuit through an expansion means and evaporator comprising:

(a) a sealed housing comprising an elongate tubular member having a top end and bottom end sealed to enclose the interior thereof, said sealed housing extending into a well containing cool artesian water;

(b) an inlet passing through said sealed housing through which a vaporous refrigerant is introduced into said sealed housing;

(c) a plurality of deflector baffles constructed and arranged along the longitudinal axis of said elongate tubular member on the interior of said sealed housing for directing the vaporous refrigerant toward contact with the wall of said elongate tubular member of said sealed housing for condensation of the vaporous refrigerant to cool to form a liquid collecting at said bottom of said sealed housing;

(d) a pump with an inlet positioned at said bottom of said sealed housing, said pump being sufficietly placed in said

sealed housing that the inlet thereof is covered by the liquid refrigerant in said sealed housing;

(e) an outlet in said sealed housing; and

(f) a conduit connected at a first end to said pump and passing through said outlet in said sealed housing and connectable at a second end to said expansion means such that said pump lifts the liquid refrigerant through said conduit into said expansion means.

4,224,806

TRIPOD-TYPE UNIVERSAL JOINT WITH A SNAP-ON RETAINER

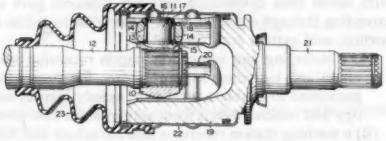
Katsuyuki Kobayashi, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 17, 1979, Ser. No. 30,745

Claims priority, application Japan, Oct. 11, 1978, 53-124943

Int. Cl.³ F16D *3/30*

U.S. Cl. 64—21 **11 Claims**



1. A tripod-type universal joint, comprising:

a central hub member;

a trunnion of cylindrical outer surface shape protruding from the central hub member which has a groove formed around its periphery near its tip portion;

a plurality of needle rollers arranged around the outer surface of the trunnion;

a ball roller of part-spherical outer shape and with a cylindrical hole through it, which is engaged over the needle rollers so as to rotate on them around the axis of the trunnion;

an elastic circlip which is engaged around the trunnion in the said groove, which in its unstressed state has an outer approximately circular shape which is larger in radius than the cylindrical surface of the trunnion and an inner approximately circular shape which is smaller in radius than the cylindrical surface of the trunnion, and which is radially thinner than the groove is deep;

and a generally annular retainer, fitted over the tip of the trunnion and the circlip, which is formed with:

an inner cylindrical surface slightly larger than the cylindrical surface of the trunnion and conforming snugly thereto;

an annular needle roller stop face which opposes the ends of the needle rollers which are remote from the central hub;

an annular ball roller stop face which opposes the end of the ball roller which is remote from the central hub;

a cutaway extending from the needle roller stop face and tapering down to the inner cylindrical surface;

and a first circlip stop face which joins the inner cylindrical surface at its edge remote from the central hub, and which opposes the circlip, thereby preventing the retainer from coming off the end of the trunnion away from the central hub;

the retainer thereby retaining the needle rollers and the ball roller on the trunnion.

4,224,807

ELASTIC COUPLING

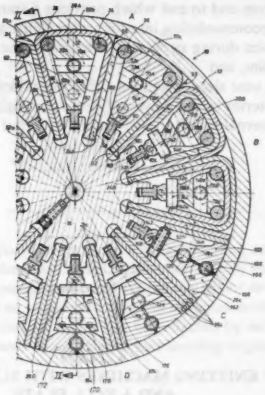
Ilie Chivari, Berlinerstrasse 1, 4690 Herne 2, Fed. Rep. of Germany

Filed Jan. 9, 1978, Ser. No. 868,053

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703481

Int. Cl.³ F16D *3/80*

U.S. Cl. 64—26 **38 Claims**



1. In an elastic coupling of the type including a first coupling member having a radially outer ring, a radially inner second coupling member having a plurality of recesses in its peripheral surface, and a plurality of substantially radially extending leaf spring means having radially inner and outer ends, said leaf spring means being attached at their outer ends to said first coupling member and extending with their free inner ends into said recesses, each of said leaf spring means having a plurality of axially adjacent strips, the improvement wherein each of the leaf spring means comprises:

a central strip; and

an axially outer strip on each side of the central strip, said outer strips having a smaller axial width than the central strip.

4,224,808

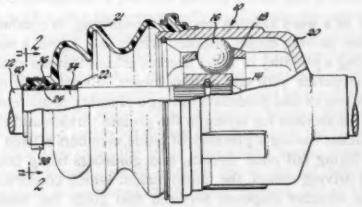
VENTING ARRANGEMENT FOR STROKING UNIVERSAL JOINT

Glenn F. Gehrke, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 15, 1979, Ser. No. 3,712

Int. Cl.³ F16D *3/02*

U.S. Cl. 64—32 F **3 Claims**



1. A venting arrangement for a stroking universal joint having an outer drive member, an inner drive member disposed in the outer drive member which is drivingly and strok-

ingly connected thereto, a shaft connected to the inner drive member and a flexible elastomeric boot mounted on an end of the outer drive member and the shaft at opposite ends, comprising:

an annular groove in the periphery of the shaft, and

a vent sleeve disposed in the annular groove and maintained therein by means including a neck portion of the flexible elastomeric boot,

said vent sleeve having an internal spiral groove extending from end to end which provides a spiral vent passage for accommodating interior volume changes of the universal joint during stroking movement of the stroking universal joint, and

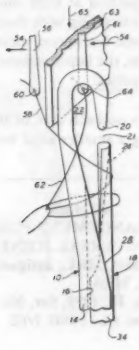
said vent sleeve having a radial slot which is disposed in the interior of the universal joint for purging grease from the internal spiral groove during universal joint rotation.

4,224,809

WARP KNITTING MACHINES WITH SLIDER NEEDLES AND A FALL PLATE

Christian Wilkens, Heusenstamm, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Oberthausen, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,388
Int. Cl.[2] D04B *23/00, 27/00*
U.S. Cl. 66—207 **4 Claims**



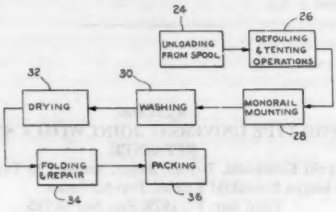
1. In a warp knitting machine comprising, in combination, a frame, driving means disposed within said frame, a needle bar having a plurality of slider needles affixed thereon and a depth to cooperate with said driving means, at least a pair of guidebars, one of said guidebars having a plurality of guide members affixed thereon for laying in the ground threads and the other guidebar having a plurality of guide members affixed thereon for laying fall plate threads, said guidebars being coupled to said driving means, the improvement which comprises; a fall plate member disposed between said guide bar members in front of said needles, said fall plate member being coupled to said driving means and adapted to interact with said fall plate threads and said needles whereby the fall plate stroke is reduced to provide a fall plate weft thread lay ins bound by said ground thread without the fall plate thread forming a stitch.

4,224,810

SYSTEM FOR REFURBISHING AND PROCESSING PARACHUTES

Russell T. Crowell, Titusville, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1977, Ser. No. 862,878
Int. Cl.[3] D06F *31/00*
U.S. Cl. 68—3 R **5 Claims**



1. A system for refurbishing and processing parachutes of the type having a canopy including a plurality of gore sections with radial lines delineating between adjacent gore sections extending through a generally common point to define an apex portion, said system comprising:

(A) a defouling and inspection station receiving said parachute and including support means for suspending said parachute to enable a worker to openly inspect said canopy and remove debris from and untangle said parachute;

(B) a washing station receiving said parachute and including means for washing said parachute as required for removing foreign matter and soiling;

(C) a drying station receiving said parachute and including blower means for delivering heated air for drying said parachute;

(D) a folding station including table means for receiving said parachute for final inspection, repair, and folding thereof;

(E) an overhead conveyor by which said parachute is carried and suspended in a systematic arrangement to permit water and air to pass therethrough at said washing and drying stations, respectively, said conveyor including a generally horizontal conveyor path for sequentially transporting said parachute from station to station; and

(F) hook means for attaching every nth radial line to said conveyor with said apex portion conveyed forwardmost where n is defined by $n=2G+1$, where G is the desired number of gore section depending from either side of the point of attachment to said conveyor.

4,224,811

AUTOMATIC WASHER

Kiyoshi Yamashita, Suzuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 30, 1979, Ser. No. 25,677
Claims priority, application Japan, Apr. 14, 1978, 53-43843
Int. Cl.[3] D06F *17/06, 39/08*
U.S. Cl. 68—12 R **4 Claims**

1. An automatic washer for automatically washing materials to be cleaned comprising:

a washer body;

a stirring member;

a rotary tub for holding water and said materials to be cleaned, received in said washer body and fitted with said stirring member;

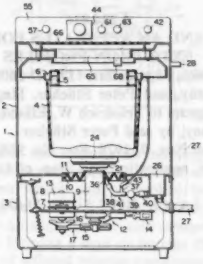
a water-draining conduit defining a first water passage and a water guide conduit defining a second water passage, for directing said water from said rotary tub to an exterior location;

said water guide conduit extending between said water-

draining conduit and the bottom of said rotary tub and including a valve in a position intermediate of said water-draining conduit and said rotary tub bottom, the portion of said water guide conduit downstream of said valve having a minimum cross-sectional area which is larger than the minimum cross-sectional area of the portion of said water guide conduit upstream of said valve, so that the drainage fluid flow capacity of said water guide conduit downstream of said valve exceeds the fluid flow capacity upstream of said valve;

drive means for selectively rotating said stirring member for washing said materials or rotating said rotary tub to remove water from, and thereby dehydrate, said materials to be cleaned;

means, bypassing said water guide conduit, for delivering water removed from said materials to be cleaned and a



portion of said water in said tub to said water-draining conduit;

detection means, disposed at said water guide conduit upstream of said valve, for detecting a fall in the level of said water in said tub and for issuing an operation signal upon detection of said fall in said water level; and

control means, responsive to said operation signal, alternatively disposed in a first and a second position and coupled to said drive means and said valve, for closing said valve and rotating said stirring member when said control means is set in said first position and for opening said valve to drain said tub when said control means takes said second position and then rotating said rotary tub in response to said operation signal while said control means is disposed in said second position and said water is draining from said tub so as to simultaneously drain said water from said tub and dehydrate said materials to be cleaned.

4,224,812

WASHING APPARATUS

Johannes Kutz, St. Tünis near Krefeld, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,624

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736604

Int. Cl.[2] D06B *1/02*

U.S. Cl. 68—205 R **5 Claims**

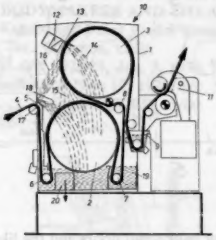
1. In washing apparatus for continuously running webs of a material which includes:

(a) a housing;

(b) at least two drums, arranged in said housing one substantially vertically above the other with a space therebetween, with a web of material running through said housing and being looped around said two drums; and

(c) at least one slit nozzle disposed within said housing opposite the upper drum and on one side of said upper drum, said slit nozzle being aimed toward said upper drum and extending over the width of the web of material, by means of which a flat water jet is directed toward the web of material looped around said upper drum, said flat water jet impinging against said web of material looped around said upper drum with at least some of said water reflected away from said upper drum in a wave, said jet directed so that the reflected water flows at least partially downward, the improvement comprising:

(d) means for conducting the web of material about said drums so that it covers the upper portion of the lower drum in one looping region, and



(e) a baffle disposed at the height of said looping region on one side of the lower drum, which one side of the lower drum corresponds to the one side of the upper drum, at a position and an angle such that the reflected water wave will impact on said baffle and be reflected by said baffle toward the web of material in said looping region of the lower drum.

4,224,813

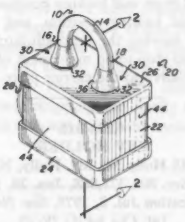
PADLOCK COVER AND SHACKLE SEAL THEREFOR

Marshall D. Hampton, 2125 S. Ammons, Lakewood, Colo. 80227

Filed Dec. 26, 1978, Ser. No. 972,992

Int. Cl.[3] E05B *67/38*

U.S. Cl. 70—51 **11 Claims**

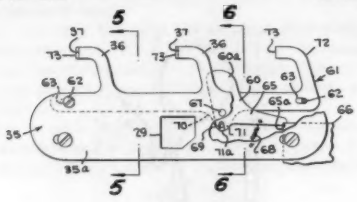


1. In combination: a padlock having a case and a U-shaped shackle with a long leg permanently fixed inside the case and a short leg releasable therefrom upon actuation into unlocked condition; a protective cover for the padlock case including an open-topped hollow shell encircling the latter and a lid and bottom detachably connected to the shell, said lid having a pair of openings therein sized and positioned to receive the legs of the shackle; and means for sealing the openings in the lid where the shackle legs enter the latter comprising means encircling the shackle legs in spaced relation above the lid defining a downwardly-facing annular abutments thereon, and an O-ring encircling each leg in fluid-tight annular contact therewith, said annular abutments and opposed surfaces of the lid therebeneath cooperating with one another upon actuation of the shackle into locked position to squeeze said O-rings therebetween and effect a fluid-tight seal.

4,224,814
TIME LOCK HAVING RELEASABLE CARRIER LATCHING DEADBOLT

Charles G. Bechtiger, La Chaux-de-Fonds, Switzerland, assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Feb. 2, 1979, Ser. No. 8,850
Int. Cl.[3] E05B 43/00
U.S. Cl. 70—272 16 Claims

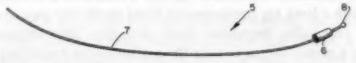


1. A time lock for bank vault doors and the like comprising a housing, a plurality of timer units of the settable dial type mounted in said housing, a carrier assembly transversely movable in the housing between a locking position and a release position for locking and releasing snubber bar blocking means, each of the timer units having a rotatable time-lapse indicating dial and clockwork mechanism and an actuator for engaging and moving the carrier assembly from said locking position to said release position when the dial reaches zero time position, said carrier assembly including a carrier plate having abutment formations to be engaged by each actuator when the associated timer dial reaches zero time position for moving the carrier plate and carrier assembly to release position, a control plate supported for limited relative movement with respect to the carrier plate having a projection adjacent each said abutment formation extending a short predetermined distance ahead of the abutment formation to be engaged by said actuator immediately prior to actuator engagement of the adjacent abutment formation as the adjacent timer nears zero time position to effect predetermined limited travel of the control plate relative to the carrier plate, a deadbolt latch lever pivotally mounted on the carrier plate and resiliently biased in a direction to releasably engage a stationary stop for holding the carrier plate against movement from said locking position when the carrier assembly is in said locking position, and the control plate having means for moving the deadbolt latch lever out of engagement with said stop upon movement of the control plate by the actuator relative to the carrier plate.

4,224,815
KEY HOLDER

Wade B. Aiken, 215 Holly St., Mt. Holly, N.C. 28120

Continuation of Ser. No. 371,888, Jun. 20, 1973, abandoned.
This application Jul. 8, 1975, Ser. No. 594,068
Int. Cl.[2] A47G 29/10
U.S. Cl. 70—457 1 Claim



1. A key holder having two loop portions to retain keys, the holder comprising a tubular member having a bore, elongated strand means of monofilament nylon for engaging said keys, said strand means having a cross-sectional diameter substantially less than the cross-sectional diameter of said bore whereby portions of said strand may be passed three times through the said tubular member, said strand having end portions extending through said bore in opposite directions, the said loop portions being formed by the remainder of the said elongated strand, one loop positioned at one end of said tubular member and another loop positioned at the other end of said tubular member, an integral enlargement means formed on at least one end of said strand for preventing passage of said end through said bore of said tubular member, said integral enlargement means comprising fused nylon formed by heating at least one end of said strand to above the softening point of the strand material to gather a quantity of the monofilament nylon which upon being cooled to ambient temperatures results in said integral enlargement.

4,224,816
METHOD OF AND AN APPARATUS FOR PRODUCING EXTRUSION PROFILES

Friedrich W. Elhaus, Jägerhofstr. 117a, D-5600 Wuppertal, Fed. Rep. of Germany, and Peter Stücker, Hagen, Fed. Rep. of Germany, assignors to Friedrich W. Elhaus, Wuppertal, Fed. Rep. of Germany, by said Peter Stücker

Filed Nov. 9, 1978, Ser. No. 958,999
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1977, 2750899
Int. Cl.[3] B21C 31/00, 51/00
U.S. Cl. 72—9 9 Claims

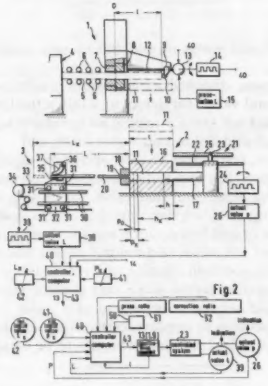


Fig.2

1. A method for producing from a series of billet blanks a plurality of extrusion profiles each having a given first longitudinal dimension, and a plurality of corresponding billet remnants each having a given second longitudinal dimension, comprising the steps of

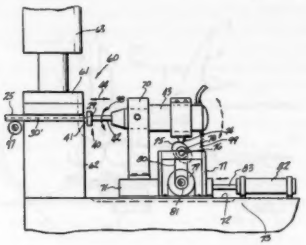
(a) severing a first billet (11) to a predetermined length (l);
(b) initiating longitudinal extrusion of said first billet, thereby to progressively form said billet into an extrusion profile portion and a billet remnant portion;
(c) continuously measuring during the extrusion process the longitudinal dimensions of both the extrusion profile and billet remnant portions, respectively;
(d) interrupting the extrusion process when one of said dimensions reaches its predetermined value; and
(e) adjusting the predetermined length to which the next succeeding billet is severed in accordance with said measured dimensions, whereby the extrusion profile and billet remnant produced from the next succeeding billet will have dimensions more closely approximating the given first and second longitudinal dimensions, respectively.

4,224,817

APPARATUS AND PROCESS FOR MAKING TUBE IN SHEET HEAT EXCHANGERS

Charles A. Kleine, Florissant, Mo., and Kenneth Belangee, Alton, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 29, 1979, Ser. No. 7,585
Int. Cl.³ B23P 15/26
U.S. Cl. 72—54 21 Claims



1. In an apparatus for forming an opening in a composite metal panel comprising at least two sheets of metal having a bond therebetween which can be broken by inflation, said opening extending between said sheets of metal and inwardly of said panel from an edge thereof, said composite metal panel being adapted for forming a heat exchanger therefrom having a desired pattern of inflated tubular passageways therein; said apparatus comprising:

means for hammering with a blunt surface said edge of said panel at a position wherein said opening is to be formed for delineating a bond interface between said sheets of said panel; the improvement wherein:

said hammering means includes a hammering member and means for moving said hammering member to and fro against said edge while simultaneously rocking said member about said edge and a plane of said panel, said hammering means being adapted to upset the metal of said panel at said position at said edge so that said bond interface is delineated by widely spaced lips formed on said sheets;

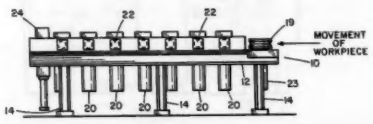
whereby improved delineation of said bond interface is provided.

4,224,818

METHOD AND APPARATUS FOR COLD FINISHING OF METALS

Samuel H. Jones, Flossmoor, and Dick A. Stawarz, Momence, both of Ill., assignors to LaSalle Steel Company, Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 938,862
Int. Cl.³ B21C 1/26, 3/14; B23B 5/00
U.S. Cl. 72—284 16 Claims



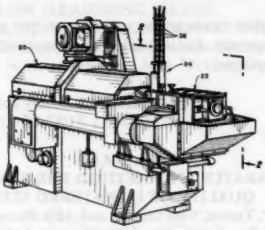
1. Apparatus for the cold finishing of metals comprising at least one pair of rollers adapted to engage a workpiece of repeating cross-section therebetween, with one of the rollers of said pair being movably mounted and hydraulic means to continuously urge said one roller toward pressure engagement with the other roller of the pair to secure the workpiece therebetween, means for driving at least one of said rollers to advance the workpiece in a forward direction, V-shaped guides to support the workpiece and a cold finishing tool mounted down stream of said pair of rollers adapted to receive the workpiece advanced thereby, said finishing tool being mounted in a gimbaled fashion.

4,224,819

INTERNAL GASEOUS FLUID STRIPPER FOR CAN BODYMAKERS AND THE LIKE

Rimvydas A. Kaminskas, Palos Verdes Estates, Calif., assignor to Standun, Inc., Compton, Calif.

Division of Ser. No. 692,505, Jun. 3, 1976, Pat. No. 4,164,860. This application Nov. 17, 1978, Ser. No. 961,878
Int. Cl.³ B21D 45/00
U.S. Cl. 72—345 26 Claims



1. In a method of stripping a cup-shaped article after certain manufacturing operations thereon from an end portion of a reciprocal ram; the steps of: establishing a permanent gas containment void of preset total volume in said ram permanently open forwardly through a ram end surface; filling said void with gas supplied at an original determined pressure above atmospheric; confining said gas in said void against forward flow therefrom at least immediately prior to stripping solely by said article in finished form ready for stripping over said ram end; without in any way altering said void volume and its being permanently open forwardly through said ram end surface throughout stripping, progressively flowing at least said void gas into increasing exposed size inner confines of said article during progressive stripping of said article from said ram; by preselecting said supplied gas original determined pressure relative to said void and article volumes, maintaining said gas pressure progressively reducing but above atmospheric throughout said article stripping and finally reduced not substantially lower than atmospheric at the instant of completion of said stripping.

4,224,820

FREQUENCY DEVIATION METER FOR TIMEPIECES

W. Jorge Sitkewich, Two Gwynne Rd., Franklin, Mass. 02038, and Sanford Roth, 1 Stillwood La., Catskill, N.Y. 12414

Filed Feb. 23, 1979, Ser. No. 14,380
Int. Cl.³ G04B 17/00
U.S. Cl. 73—6 18 Claims

1. A frequency deviation meter for determining the error of a timepiece internal oscillator comprising:

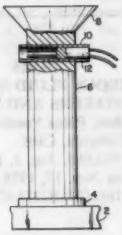
(a) resonant sensor column means for picking up ultrasonic radiation from a timepiece internal oscillator,

(b) an amplifier circuit connected to the output of said resonant column for amplifying the signal detected by the resonant column,

(c) a reference oscillator connected in circuit with the amplifier,

(d) a frequency comparator connected in circuit with the oscillator and amplifier circuit, for comparing the fre-

quency of the reference oscillator to that of the output amplifier, and



(e) display means connected to the output of said frequency comparator for indicating the output of said frequency comparator.

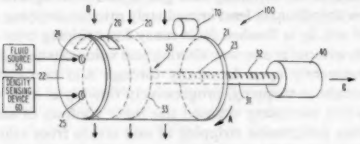
4,224,821
APPARATUS AND METHOD FOR SENSING THE QUALITY OF DEWATERED SLUDGE

Lauren P. Taylor, Swarthmore, and Alex Petroski, Springfield, both of Pa., assignors to LRS Research Ltd., Broomall, Pa.

Continuation-in-part of Ser. No. 885,683, Mar. 13, 1978, Pat. No. 4,159,248, which is a continuation-in-part of Ser. No. 812,483, Jul. 5, 1977, Pat. No. 4,160,734, which is a continuation of Ser. No. 709,566, Jul. 26, 1976, Pat. No. 4,040,960. This application May 14, 1979, Ser. No. 38,690

Int. Cl.³ G01G *9/36*

U.S. Cl. 73—32 R **12 Claims**



1. A cake sensing apparatus comprising:

(a) cylinder means comprising a hollow cylindrical shell and having an opening for receiving a cake material therein, said cylinder means having a fluid source inlet connected thereto;

(b) piston means in said cylinder means for compressing against and withdrawing from material in said cylinder;

(c) density sensing means connected to said cylinder means for sensing the density of compressed cake material in said cylinder; and

(d) torque motor means connected to said piston means moving said piston means toward and away from cake material in said cylinder means and for determining the amount of torque required to move said piston means.

9. A method of sensing the quality of dewatered sludge comprising the steps of:

(a) introducing and then compressing said dewatered sludge within a closed end hollow cylinder using a piston driven under a predetermined torque;

(b) sensing the density of said compressed, dewatered sludge; and

(c) withdrawing said piston from said compressed dewatered sludge and measuring as a function of time the distance moved by said piston and the torque required to retract said piston from said compressed dewatered sludge.

4,224,822
DEVICE FOR MEASURING THE COMPACTNESS OF CIGARETTES OR THE LIKE

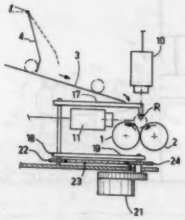
Michel Morin, and Alain Rousseau, both of Orleans, France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Jun. 27, 1979, Ser. No. 52,508

Claims priority, application France, Jul. 13, 1978, 78 20929

Int. Cl.² G01N *3/42*; A24C *5/32*

U.S. Cl. 73—81 **6 Claims**



1. A device for measuring the compactness of cylindrically shaped smoking articles such as cigarettes and the like, comprising a supply unit for bringing the articles to a positioning and delivering assembly,

two units for measuring the compactness mounted on either side of said assembly, which assembly defines a rectilinear path extending substantially from one measuring unit to the other to allow each article to be moved from a central reception position towards an outermost measuring position,

means for positioning the articles when in said reception position alternately in two different angular positions, and

means for displacing the articles along said path alternately towards one and the other measuring unit.

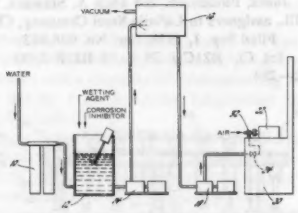
4,224,823
FUEL SYSTEM FLOW PROCESS

Partab T. Jeswani, and Gerard T. Ruflin, both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 15, 1979, Ser. No. 12,355

Int. Cl.³ G01M *19/00*

U.S. Cl. 73—118 **6 Claims**



1. The process of determining the rate of flow of fuel which can be provided through a fuel system, said process including the steps of:

delivering through said fuel system an aqueous solution having an unstable foam which decays in a period on the order of about 10 seconds from the stabilized foam height generated during aeration of about 46 cc of solution with an air flow of about 397 cc/minute,

and measuring the rate of flow of the solution through said fuel system.

4,224,824

DETECTING DEVICE FOR BREAKS OR TEARS AND FOR THE END OF THE STRIP IN A STRIP OF ANY MATERIAL DURING ITS ADVANCE

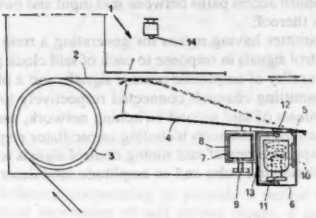
Giampiero Giusti, 52 Via Barbantini, 55100 Lucca, Italy

Filed Feb. 2, 1979, Ser. No. 9,086

Claims priority, application Italy, Mar. 24, 1978, 9389 A/78; Oct. 4, 1978, 51361 A/78

Int. Cl.³ G01N *33/34*

U.S. Cl. 73—159 **16 Claims**



1. A device for detecting breaks or tears and the end of the strip in a strip of any material, during its travel and while it is free of contact with a support, which device comprises feeler means for feeling the material of the strip, so as to follow the changes of direction and/or the oscillations thereof as the strip travels, said feeler means pointing in a direction opposite to the direction of travel of the strip and being biased to push against the traveling strip and to penetrate into a tear; and means for detecting the tear and the end of the strip, actuated by said feeler means when the latter penetrate into the cut of the tear or when the end of the strip is reached.

4,224,825

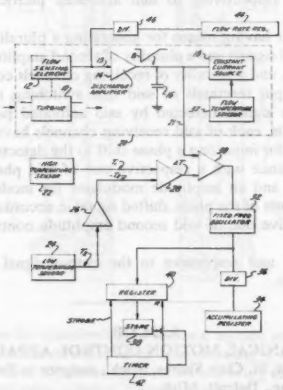
HEAT METERS

Murray F. Feller, Citrus County, Fla., assignor to Wilgood Corporation, Jacksonville, Fla.

Filed Oct. 12, 1978, Ser. No. 950,787

Int. Cl.³ G01K *17/16*

U.S. Cl. 73—193 R **10 Claims**



1. Apparatus for measuring the thermal energy change of a fluid that passes from an inlet through a heat-exchange zone to an outlet, including inlet and outlet electrical fluid-temperature-responsive devices, means responsive to said devices for deriving a temperature-difference signal representing the difference between the inlet and outlet temperatures of the fluid, fluid-metering means for providing a series of impulses whose repetition rate represents the volume rate of fluid flow, means responsive to the impulses of said fluid-metering means for producing a train of triangular waves each having a sharp front and an ensuing slope, a signal generator for providing a constant-frequency signal recurring a large number of times during each said triangular wave, registering means, means responsive to said triangular-wave producing means and said temperature-difference signal deriving means for developing successive enabling signals whose individual durations in relation to their recurrence time intervals represent the product of the temperature difference and the flow rate of the fluid, and means responsive to said enabling signals for causing entry of said constant-frequency signals into said register intermittently.

4,224,826

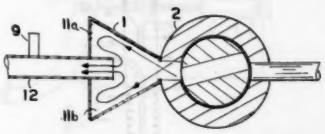
FLOW MEASURING MEANS

John McLoughlin, 92 Mobrey La., Smithtown, N.Y. 11787; Neocles Athanasiades, Setauket, and Yehuda Rotblum, Lake Grove, both of N.Y., assignors to John McLoughlin, Smithtown, N.Y.

Filed Jan. 5, 1979, Ser. No. 1,149

Int. Cl.³ G01F *15/00*; F15D *1/04*

U.S. Cl. 73—198 **3 Claims**



1. Means for measuring liquid flow in a pipe having turbulent flow comprising:

a chamber inserted in the pipe,

a chamber having a diameter substantially larger than the diameter of the pipe, and

a flow meter mounted in the pipe downstream from the chamber,

the chamber being substantially triangular and the downstream pipe extends into the chamber,

whereby the chamber substantially reduces turbulence in the pipe and provides a reliable flow measurement.

4,224,827

DEVICE FOR WATCHING THE FLOWING CONDITION OF A GAS IN A CONDUIT

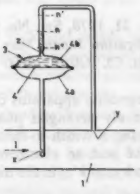
Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed Dec. 29, 1978, Ser. No. 389

Claims priority, application Netherlands, Dec. 30, 1977, 7714625

Int. Cl.³ G01F *1/46*

U.S. Cl. 73—861.65 **4 Claims**



1. A device for monitoring the flow condition of gas in a conduit comprising, in combination, a first tube connected to a

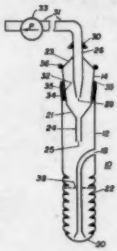
velocity pressure point in the conduit, a second tube connected to a static pressure point in the conduit, a liquid-containing chamber which is divided by a freely movable partition into two leak-tight, mutually separated compartments communicating one with the first tube and the other with the second tube intermediate the points, the second tube including a vertical leg above the chamber through which the second tube communicates with its respective compartment, the partition being deformed by said liquid in response to flow condition of the gas to force the liquid out into a column in the vertical leg to reading levels.

4,224,828

NON-SPILL GAS-LIQUID CONTACT UNIT

Walter A. Steinke, Edgewood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 965,955
Int. Cl.³ B01D *47/02, 53/00*
U.S. Cl. 73—421.5 R **13 Claims**



13. In a gas-liquid contact unit comprising:
a lower chamber for absorber liquid having an open end;
an upper chamber having a tube-like inlet means projecting centrally into said lower chamber for passage of gas from said lower chamber into said upper chamber and a tube-like outlet means projecting centrally inwardly into said upper chamber for passage of gas out of said upper chamber;
a fluid tight joint means for removably joining said lower chamber to said upper chamber; and
a gas intake tube centrally extending into said lower chamber for absorber liquid,
the improvement wherein said gas intake tube is mounted in a sidewall opening of said lower chamber and entirely contained therein.

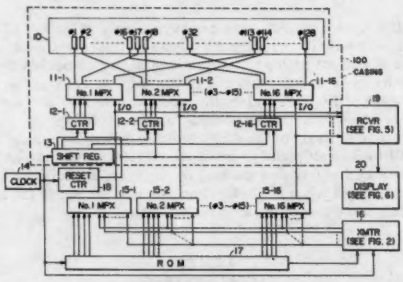
4,224,829

TWO-DIMENSIONAL LINEAR B-SCAN ULTRASOUND DIAGNOSTIC APPARATUS WITH PHASE AND AMPLITUDE TAPERING

Masami Kawabuchi; Jun-ichi Sato; Kiyotaka Nagai; Hiroshi Fukukita, and Akira Fukumoto, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 21, 1978, Ser. No. 962,609
Claims priority, application Japan, May 30, 1978, 53/65206
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—626 **9 Claims**

1. An ultrasound diagnostic apparatus comprising:
an array of successively arranged plate-like piezoelectric elements each having a width-to-thickness ratio equal to or smaller than 0.8 and an electromechanical coupling coefficient close to k_{33} or k'_{33} in the direction of the thickness;
a source of clock pulses;
a first switching network having a plurality of output terminals connected respectively to said piezoelectric elements to establish access paths between a plurality of input terminals and a group of successively arranged ones of said piezoelectric elements to activate same in response to each of said clock pulses;
means for causing said first switching network to establish said access paths such that said group of the activated piezoelectric elements is shifted by at least one piezoelectric element in response to each of said clock pulses;
a second switching network having a plurality of output terminals connected to the input terminals of said first switching network and a plurality of input terminals to establish access paths between said input and output terminals thereof;
a transmitter having means for generating a train of timing control signals in response to each of said clock pulses and a plurality of amplitude control signals, and a plurality of transmitting channels connected respectively to the input terminals of said second switching network, each of said transmitting channels including an oscillator responsive to a respective one of said timing control signals to generate an ultrasound pulse and an amplitude modulator for modulating the amplitude of said ultrasound pulse in accordance with a respective one of said amplitude control signals;



means for causing said second switching network to establish said access paths for application of said ultrasound pulses respectively to said activated piezoelectric elements;
a receiver having means for generating a plurality of phase control signals and a plurality of second amplitude control signals, and a plurality of receiving channels connected to said input terminals of said first switching network to receive signals detected by said activated piezoelectric elements, each of said receiving channels having a phase shifter for imparting a phase shift to the detected signal in accordance with a respective one of said phase control signals and an amplitude modulator for modulating the amplitude of the phase shifted signal in accordance with a respective one of said second amplitude control signals; and
a display unit responsive to the output signal from said receiver.

4,224,830

MECHANICAL MOTION CONTROL APPARATUS

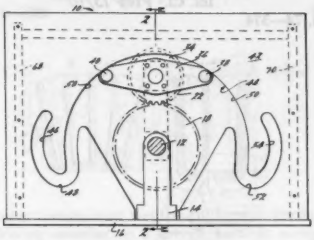
Norbert Rust, St. Clair Shores, Mich., assignor to Expert Automation, Inc., Detroit, Mich.

Filed Jan. 12, 1978, Ser. No. 868,889
Int. Cl.³ F16H *37/12*
U.S. Cl. 74—52 **19 Claims**

1. Mechanical motion control apparatus comprising:
drive means including an input shaft and a first gear fixedly secured to said input shaft;
driven means including an output shaft disposed coaxially with said input shaft and a second gear rotatably sup-

ported upon another shaft in meshing engagement with said first gear, said output shaft being rotatably driven by said second gear;

movement control means connected to said driven means, said movement control means including a cam surface and an associated cam follower means, said cam surface and



cam follower cooperating to provide a period of pure rotational movement of said driven means, a period of decelerating rotational and simultaneous accelerating revolving movement of said driven means and a period of constant velocity revolving movement of said driven means relative to said drive means while said drive means continuously moves at a substantially constant velocity.

4,224,831

DEVICE FOR TRANSFERRING A ROTATIONAL MOTION INTO A LONGITUDINAL MOVEMENT OR VICE VERSA

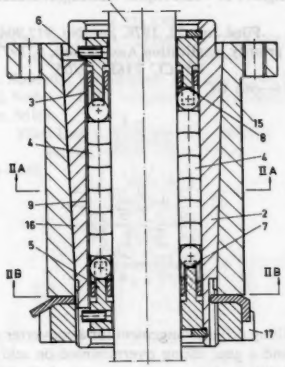
Sven W. Nilsson, Partille, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed May 4, 1978, Ser. No. 902,827

Claims priority, application Sweden, May 31, 1977, 7706289

Int. Cl.[2] F16H *27/02*

U.S. Cl. 74—89 **15 Claims**



1. A device for transferring a rotational motion into a longitudinal movement or vice versa, incorporating a cylindrical shaft (1), a sleeve (2) enclosing the shaft and being displaceable along and rotatable relative thereto, a cage (3) arranged between said sleeve and said shaft, a plurality of rolling bodies (4) provided in said cage and being arranged during operation to roll in a closed track around the shaft, said track having a helical portion and a recirculation portion, said rolling bodies contacting the shaft and the sleeve in said helical portion and being axially moveable in said recirculation portion, and cam profile members (5, 6) arranged at the ends of the cage for actuating the rolling bodies in said recirculation portion, characterized thereby, that the rolling bodies are arranged in the cage in such a manner that their axes form an angle to the cylindrical shaft, which angle corresponds to the pitch angle of the helical form of the helical track portion and said cage is mounted in said sleeve for axial movement together therewith as a unit.

4,224,832

ELECTROMOTIVE POWER BRAKE

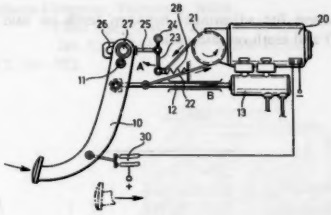
Hans Prohaska, Bietigheim-Bissingen, and Karl-Heinz Theurer, Marbach, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,421

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758644

Int. Cl.[2] F16H *35/00*

U.S. Cl. 74—388 R **13 Claims**



1. An electromotive power brake comprising:

an electric motor actuated by a brake pedal, said motor providing braking power assistance;

a master cylinder having a tappet push rod connected to a master cylinder piston; and

transmission means interconnecting said brake pedal, said motor and said tappet push rod, said transmission means having a frictional coupling to actuate said tappet push rod, the friction of said coupling increasing in proportion to the brake pedal pressure.

4,224,833

RACK AND PINION STEERING, ESPECIALLY FOR MOTOR VEHICLES

Erich Jablonsky, Boebingen Rems, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,663

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742427

Int. Cl.[3] B62D *1/20*

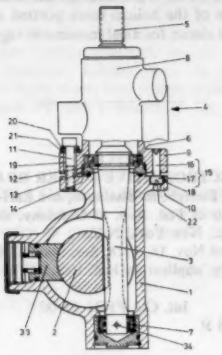
U.S. Cl. 74—422 **10 Claims**

1. In an adjustable rack and pinion steering assembly for motor vehicles, a housing comprised of two joined members (1, 8) and having respective relative pivotal movement surface means (12, 13) engaged therebetween;

a pinion shaft (3) extending between said housing members having an end with a self-aligning pivotal bearing (7) support therefore in one housing member (1) and fixed bearing (6) support in the other housing member; said surface means providing pivotal movement of said housing members about the pivotal center of said self-aligning pivotal bearing;

a rack in said housing engaging said pinion shaft;

and actuating means (15) extending between said housing members for effecting relative pivoting of said housing



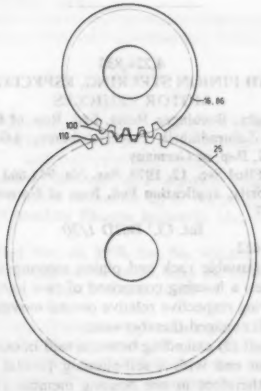
members for adjustment between teeth on said pinion shaft and teeth on said rack.

4,224,834

MATING SPUR GEARS

Erich Kotthaus, Wallisellen, Switzerland, assignor to Oerlikon-Bührle AG, Zürich, Switzerland

Division of Ser. No. 729,351, Oct. 4, 1976, Pat. No. 4,183,703.
This application Nov. 6, 1978, Ser. No. 957,985
Claims priority, application Switzerland, Oct. 24, 1975, 13770/75
Int. Cl.[3] F16H *55/08*
U.S. Cl. 74—462 3 Claims



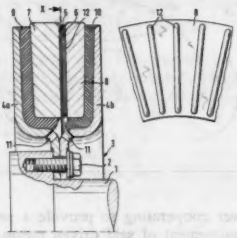
2. A pair of mating spur gears having substantially parallel gear axes wherein the teeth of the one spur gear element possess an involute-shaped tooth depth profile and the teeth of the mating gear element possess a straight tooth depth profile.

4,224,835

SELF-COOLING RESONANCE TORSIONAL VIBRATION DAMPER

Friedrich Bauer, Mittelhembach, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-NüeüÊ ÖüÊüüñäÄ üeüÊ üö ü Ä üä

Filed Jul. 31, 1978, Ser. No. 929,270
Int. Cl.[2] F16F *15/10*
U.S. Cl. 74—574 11 Claims



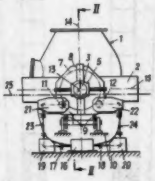
1. A resonance torsional vibration damper, especially a multi-vibration damper, which includes in combination shaft means, a primary member mounted on said shaft means, at least one secondary member connected via elastic means to said primary member, said primary member being provided with cooling air passages leading approximately radially outwardly into the region of said at least one secondary member, and cooling fins provided on the free end face of said at least one secondary member and leading radially outwardly.

4,224,836

TILTING DRIVE ARRANGEMENT FOR A CONVERTER

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 22, 1978, Ser. No. 917,904
Claims priority, application Austria, Jul. 5, 1977, 4777/77
Int. Cl.[2] F16H *37/06*
U.S. Cl. 74—665 GC 7 Claims

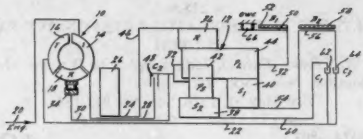


1. In a tilting drive arrangement for a converter with a tilting trunnion and a gear casing overmounted on said tilting trunnion, said tilting drive arrangement including a spur gear wheel mounted on said tilting trunnion and surrounded by said gear casing, at least two pinions meshing with said spur gear wheel and arranged within said gear casing in a plane outside the horizontal plane extending through the tilting axis of the converter, shaft means provided for a common rotation of said at least two pinions, a torque support provided to support said gear casing, and a drive motor commonly driving said at least two pinions via said shaft means, the improvement comprising said shaft means including torsionally elastic members, said torsionally elastic members separating the drives to said pinions for providing a uniform torque distribution between the pinions and a balancing of different tooth plays of said pinions.

4,224,837
FOUR SPEED OVERDRIVE POWER TRANSMISSION WITH BIDIRECTIONAL REACTION BRAKE BAND SERVO

Howard L. Croswhite, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,977
Int. Cl.[2] F16H *47/08, 57/10*
U.S. Cl. 74—688 **6 Claims**

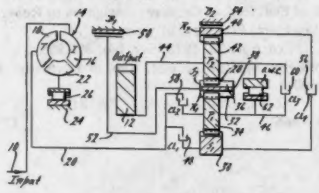


1. A power transmission mechanism for distributing torque from a driving member to a driven member comprising a hydrokinetic torque converter and multiple ratio gearing, a power output element of said gearing being connected to a driven member, clutch and brake means for controlling relative motion of the elements of said gearing to establish plural torque delivery paths, said converter comprising an impeller connected to said driving member, a turbine and a stator, first clutch means for connecting said turbine to a first torque input element of said gearing, second clutch means for connecting said impeller to a second torque input element of said gearing, first brake means for anchoring a reaction element of said gearing during low speed ratio operation, said stator being connected to said reaction element whereby said stator is adapted to accommodate hydrokinetic torque reaction of said converter during low speed ratio operation, and second brake means for anchoring an element of said gearing to establish a second reaction element during intermediate speed ratio operation whereby said first reaction element is driven at a reduced speed relative to the speed of said impeller, thus causing said stator to rotate in the direction of rotation of said impeller to establish a reduced hydrokinetic slip condition.

4,224,838
FOUR SPEED RATIO AUTOMATIC TRANSMISSION WITH COMPACT GEARING

Hesham A. Roushdy, Birmingham, and Daniel H. Hildebrand, Westland, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 6, 1978, Ser. No. 966,978
Int. Cl.[2] F16H *47/08, 57/10*
U.S. Cl. 74—688 **4 Claims**

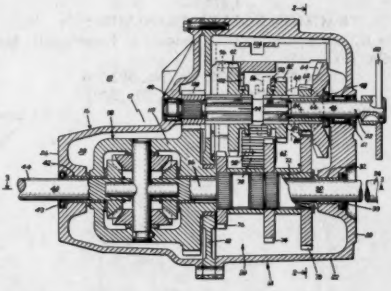


1. A multiple ratio power transmission mechanism comprising a compact planetary gear system and a hydrokinetic torque converter which define a torque delivery path from a torque input member to a torque output member; said gear system comprising planetary gear elements arranged in radially stacked relationship, one with respect to the other, and including also a first sun gear, a first ring gear, first planet pinions engageable with said first sun gear and said first ring gear and journalled rotatably on a first carrier, a second sun gear joined integrally to said first ring gear as part of a common assembly and surrounding said first sun gear, a second ring gear, second planet pinions engageable with second sun gear and said second ring gear and journalled on a second carrier; the hydrokinetic unit including an impeller and a turbine arranged in toroidal flow relationship, said impeller being connected to said torque input member; first clutch means for connecting said turbine to said first sun gear, second clutch means adapted to distribute driving torque to said first carrier, third clutch means for connecting said carriers together for rotation in unison during low speed ratio operation and during reverse drive operation, fourth clutch means for connecting together said first sun gear and said second ring gear during operation in second, third and fourth forward driving ratio; first brake means for selectively anchoring said first ring gear and said second sun gear and second brake means for selectively anchoring said second ring gear, said first brake means being applied during first and second underdrive ratio operation and during fourth ratio operation and said second brake means being applied during reverse drive operation.

4,224,839
DUAL RANGE TRANSAXLE TRANSMISSION

Roland L. von Kaler, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Apr. 7, 1978, Ser. No. 894,548
Int. Cl.[2] F16H *37/08;* B60K *41/04*
U.S. Cl. 74—701 **3 Claims**



1. In a transaxle transmission including a casing having side and opposite end walls, output shaft means for connection to a machine to be driven thereby, said output shaft means having axially aligned extensions respectively extending through said casing end walls, an input shaft extending through said casing side wall generally perpendicular with respect to said output shaft means, selectively actuable change speed gearing means in said casing drivingly connected to said output shaft means for selectively providing predetermined forward and reverse gear ratios, means for drivingly connecting said input shaft to said gearing means, and manually actuable means coupled to said gearing means for shifting the same to provide said predetermined ratios, the improvement wherein said connecting means includes gear ratio range selector means coupled between said input shaft and gearing means for selecting high and low ranges of ratios, said selector means including at least one intermediate shaft in said casing in spaced, parallel relationship with said input shaft, second means for drivingly connecting said intermediate shaft to said first-named gearing means, second selectively actuable change speed gearing means in said casing for drivingly connecting said input shaft to said intermediate shaft thereby to provide high and low speed reduction ratios between said input and intermediate shafts, and second manually actuable means coupled to said second change speed gearing means for shifting the same to provide said high and low ratios, said output shaft means including first and second output shafts in said casing respectively terminating in said extensions, said first-named gearing means including differen-

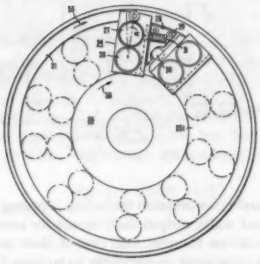
tial gearing connecting said first and second output shafts, a second intermediate shaft in spaced, parallel relationship with said output shafts, and selectively actuable change speed gearing on at least said second intermediate shaft and drivingly connected to said differential, said second connecting means including a first sleeve on said second intermediate shaft, and bevel gearing drivingly connecting said first-named intermediate shaft to said first sleeve, said change speed gearing including a second sleeve on one of said output shafts, gearing drivingly connecting said first and second sleeves, a cluster of at least two gears having different numbers of teeth on said second sleeve and rotatable therewith, a reverse gear driven by one gear of said cluster, a first change speed gear axially movable on said second intermediate shaft between a first position and a second position in engagement with one gear of said cluster, a second change speed gear axially movable on said second intermediate shaft between a first position and a second position in engagement with the other gear of said cluster, one of said change speed gears in its first position engaging said reverse gear, said differential including a cage, and gearing drivingly connecting said second intermediate shaft to said cage, said first-named manually actuable means including first and second elements in said casing for respectively moving said first and second change speed gears between the positions thereof, and a manual actuating element extending out of said casing.

4,224,840

TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed May 4, 1978, Ser. No. 902,716
Int. Cl.[2] F16H *13/06, 15/00, 13/02*
U.S. Cl. 74—798 **8 Claims**



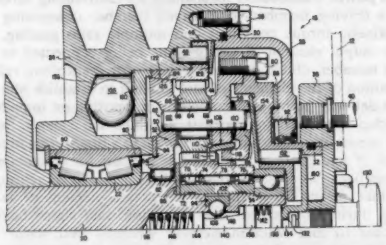
1. In a traction roller transmission comprising: coaxial input and output shafts; a traction ring mounted on one of said shafts; a sun roller mounted on the other shaft and disposed centrally within said traction ring such that an annular space is formed between said sun roller and said traction ring; and motion transmitting traction roller structures disposed in said annular space and in frictional engagement with said sun roller and said traction ring; the improvement that said traction roller structures consist of roller casters each having two parallel traction rollers rotatably supported thereon and in frictional engagement with each other and one of said traction rollers being in engagement with said traction ring and the other with said sun roller, the combined diameters of said traction rollers in each caster being slightly larger than the radial gap between the sun roller and the traction ring such that the axes of the traction roller of each caster are disposed in a first plane which is slightly tilted with respect to a second plane receiving the axis of the sun roller and traction ring and the axis of one of the respective traction rollers, each said first plane being tilted forwardly in the direction of movement of, and adjacent, the driven one of said sun roller and said traction ring, and a ball-type pivotal support structure for each caster arranged, with respect to the movement of the casters relative to the sun roller and traction ring, in front of each caster permitting the traction rollers to freely swing in any direction, also in parallel alignment with the axis of the sun roller in a plane normal to a radius of the sun roller and the traction ring and permitting the caster to tilt in a plane normal to the axis of the sun roller such that a torque transmitted through the transmission forces the traction rollers of said casters into firm engagement with each other and with the traction ring and the sun roller.

4,224,841

MULTI-SPEED TEMPERATURE RESPONSIVE FAN CLUTCH

James W. Crooks, Carmel, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed May 31, 1978, Ser. No. 911,151
Int. Cl.[2] F16D *11/00;* **F16H** *3/44*
U.S. Cl. 74—801 **20 Claims**



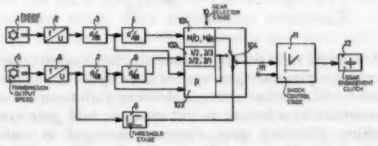
1. A multi-speed temperature responsive fan drive including a dead shaft, a rotating drive unit mounted on said dead shaft for rotation, an output shaft mounted on said dead shaft for selective rotation with and relative to said drive unit, a planetary gear unit for selectively coupling said output shaft to said drive unit; said planetary gear unit including a ring gear coupled to said drive unit for rotation therewith, a sun gear rotatably journalled on said dead shaft, and a planetary unit including a carrier fixedly secured to said output shaft; and temperature responsive control means for selectively locking components of said planetary gear unit to selectively vary said rotational speed of said output shaft relative to said drive unit.

4,224,842

GEAR SHIFTING ENGAGEMENT SHOCK CONTROL SYSTEM

Friedrich Rabus, Schwieberdingen, and Ferdinand Grob, Besigheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 26, 1978, Ser. No. 899,895
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 2719350
Int. Cl.[2] B60K *41/06, 41/08, 41/10*
U.S. Cl. 74—866 **12 Claims**



1. Gear shifting engagement shock control system for vehicles having an automatic multi-gear transmission having engine speed transducer means (1) providing an engine speed signal;

transmission output speed transducer means (5) providing a transmission output speed signal;
a gear change shock or jolt control stage (11);
a gear selector stage (10);
and clutch means (12) controlled by said shock control stage (11) establishing a driving connection between the engine and the vehicle drive wheels
wherein
the gear selector stage (10) comprises a first portion (101) controlling change of gears between disengaged or neutral position and an operating gear (R, D), and a second portion (102) controlling change of gears between gear ranges commanding movement of the vehicle (1, 3/2, 2/1);
engine speed second derivative (rate-of-acceleration/deceleration) signal transforming means (3, 4) are provided connected to and controlled by said engine transducer means (1) and providing a second derived engine speed signal representative of the second derivative of the engine speed signal, whereby said derived engine speed signal will be representative of the rate of change of acceleration/deceleration of the engine,
said engine speed second derivative signal transforming means being connected to and controlling said first portion (101) of the gear selector stage (10);
transmission output second (rate of acceleration/deceleration) derivative signal transforming means (7, 8) are provided, connected to and controlled by said transmission output transducer means (5) and providing a second derived transmission output signal representative of the second derivative of the transmission output speed signal, whereby said second derived transmission output speed signal will be representative of the rate of change of acceleration/deceleration of the output speed of the transmission, said derived signal being applied to the second portion (102) of the gear selector stage (10);
and selective connection means (104) controlled by the transmission output speed signal selectively connecting the output from the first portion, or the second portion, respectively of the gear selector stage to the shock control stage (11) in dependence on sensed speed of the output from the transmission.

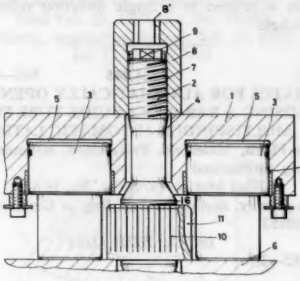
4,224,843

TENSIONING DEVICE FOR SIMULTANEOUSLY TENSIONING A PLURALITY OF BOLTS

Siegfried Heiermann, Waltrop; Hans Lachner, Herne; Jörg Richter, Wattenscheid; Peter Schüngel, Bork; Kurt Tögel, Witten, and Hans Warnke, Herne, all of Fed. Rep. of Germany, assignors to Kloeckner Werke AG, Duisburg, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 973,541
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1977, 2757671; Mar. 13, 1978, 2810739
Int. Cl.[3] B25B *29/02*
U.S. Cl. 81—57.38 **10 Claims**

1. A device for simultaneously and equally tensioning a plurality of bolts connecting a first body to a second body with one end face of the first body abutting against the corresponding face of the second body, in which the bolts are axially immovably secured in the region of one of the ends thereof to said second body and project from the latter with clearance through bores in said first body and beyond the latter, said device comprising a single carrier member on the side of the first body facing away from the second body, said carrier member being formed with a plurality of bores therethrough respectively aligned with the bores in the first body and said bolts extending with clearance through said bores of said carrier member and projecting with end portions thereof beyond the latter, each of said bolts having an intermediate threaded portion projecting beyond a face of said first body opposite said one end face; means on said end portion of each bolt for preventing movement of said carrier member away from the first body; fluid operated cylinder and piston means between said carrier member and said opposite face of said first body for pressing said carrier member away from said first body in tight engagement with said first mentioned means to thereby simultaneously transmit equal tension forces to all of said bolts; and a nut screwed onto said intermediate portion of each bolt to be



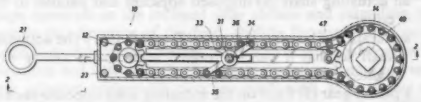
turned into engagement with said opposite face of the first body after all of said bolts have thus been simultaneously tensioned with said equal tension forces so as to hold the first body in tight engagement with said second body by said tension bolts.

4,224,844

RATCHET BOLT DRIVE APPARATUS INCORPORATING BIDIRECTIONALLY OPERABLE RECIPROCATING DRIVE MEANS

Ronald W. Henriksen, 2311 Gray Falls, Houston, Tex. 77077

Filed May 14, 1979, Ser. No. 38,394
Int. Cl.[3] B25B *13/00*
U.S. Cl. 81—57.46 **11 Claims**



1. An improvement for a ratchet wrench which includes an elongate handle to be grasped by a user, a socket drive rotatably supported by the handle and a ratchet mechanism which selectively permits rotation of the socket drive in one direction and prevents rotation in the opposite direction, the improvement comprising:
(a) a sprocket connected to the socket drive for rotation therewith;
(b) an elongate, closed loop, flexible chain operatively engaged with said sprocket;
(c) an idler sprocket engaged with said chain, said idler positioned in said handle such that said chain is deployed in a pair of adjacent portions movable in parallel loci along said handle wherein said handle is hollow to receive said idler sprocket and wherein said chain portions are located therein;
(d) a hand operated reciprocable rod extending from within said handle;
(e) a movable pivoted lock means connected to and moved by said rod along a path adjacent to said chain portions; and
(f) said lock means being within said handle and including a pair of similar chain engaging means deployed to engage both chain portions in the handle and further being constructed and arranged to engage one chain portion on movement of said rod out of the handle and further engaging the other chain engaging means with the remaining

chain portion on movement into the handle, each of said chain engaging means positively holding said chain on movement in one direction, while the other chain engaging means does not positively hold said chain, said chain engaging means functioning alternately dependent on the direction of movement of said handle and further alternately not positively holding said chain such that said chain is rotated in a single direction relative to said sprockets.

4,224,845

APPARATUS FOR AUTOMATICALLY OPENING AND CLOSING A BAR STOCKGUIDE TUBE FOR A MULTISPINDLE AUTOMATIC LATHE

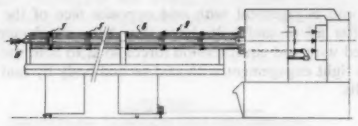
Hermann Flisch, Maienfeld, Switzerland, assignor to Eunipp AG, Zug, Switzerland

Filed Mar. 2, 1979, Ser. No. 16,816

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1978, 2810852

Int. Cl.³ B23B *13/04*

U.S. Cl. 82—2.7 **7 Claims**



1. Apparatus for automatically opening and closing a selected one of a plurality of guide tubes arranged mutually parallel on a loading drum (9) from which rod stock is fed to a lathe, each guide tube being of the type having a feed channel (1) with an open side and a cover (2) which can be pivoted over the open side to effectively close it, the improvement therein comprising:

a plurality of gear segments (4) fixed to the outer side of the cover and spaced longitudinally along it,

an actuating shaft (6) disposed adjacent and parallel to the cover,

a plurality of bearing supports (7) which carry the actuating shaft so that it can be rotated and moved axially to a limited extent,

a pinion gear (5) fixed on the actuating shaft opposite each of the gear segments and constantly engaged therewith within the range of axial movement of the actuating shaft, each pinion gear being associated with one of the bearing supports,

locking means (52) fixed to the pinion gear on the side toward the associated bearing support, so that an axial shaft movement bringing the pinion gear toward the associated bearing support moves the locking means into a matching receiving opening in the associated bearing support to lock the cover in a closed position, and

drive means (10–15) for axially moving the shaft to unlock the cover and then rotating the shaft to open the cover.

4,224,846

TURNING BORING HEAD WITH A TOOL FOR RADIAL ADJUSTMENT

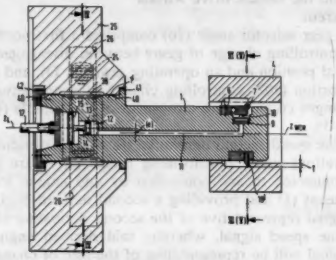
Dieter Eysel, Maintal, and Wilfried Gerk, Rödermark, both of Fed. Rep. of Germany, assignors to Firma Samson Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,369

Int. Cl.³ B23B *29/00, 41/00, 51/00*

U.S. Cl. 82—36 R **6 Claims**

1. A boring head having a boring axis and at least one bit disposed on the boring head for feed radially relative to said axis, the boring head having at least one elastic deformable bit holder provided for feed by means of at least one pressure piece which is powered by a controllable pressure medium dependent on the desired value of a bore diameter, said pressure piece comprising a feed piston movably mounted in a feed cylinder disposed transversely to said axis, said feed piston being operated by a pressurized liquid contained in a hydraulic cylinder and a hydraulic line interconnecting said hydraulic cylinder and said feed cylinder, a hydraulic piston of a first



diameter movable in said hydraulic cylinder for pressurizing said liquid, a pneumatic piston of a second diameter greater than said first diameter being coupled with said hydraulic piston and working in a pneumatic cylinder which is connected with a pneumatic signal producer.

4,224,847

TOOL POSITIONING APPARATUS

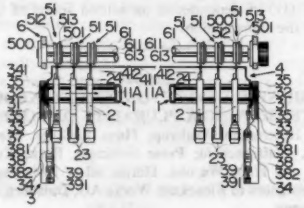
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Filed Oct. 12, 1978, Ser. No. 950,833

Claims priority, application Japan, Oct. 20, 1977, 52-126587; Feb. 16, 1978, 53-17194; Aug. 19, 1978, 53-101159

Int. Cl.³ B26D *1/24*

U.S. Cl. 83—71 **10 Claims**



1. A tool positioning apparatus which is adapted to position by a numerical control a plurality of pairs of tools attached to pairs of tool holders mounted on a pair of parallel shafts so that longitudinal slits, scores or the like may be produced along a web of board such as corrugated board conveyed through between said pair of shafts, said tool positioning apparatus being provided with; pairs of tool holders slidably mounted on said pair of parallel shafts and adapted to attach said pairs of tools respectively; shifters arranged at tool feed control devices which are provided correspondingly to the number of said pairs of tools and movable on at least one guide member parallel to said shafts, and being adapted to engage and disengage with said pairs of tool holders respectively; a moving device capable of engaging simultaneously all of said shifters with said pairs of tool holders respectively and disengaging simultaneously all said shifters from said pairs of tool holders respectively, each pair of said pairs of tool holders having a pair of head grooves adapted to coact with a shifter to form a gap between said pair of tools when first engaged with a shifter and then moved on said shafts, and also to allow said pair of tools to contact with each other when secondly engaged with

said shifter; and a numerical positioning controller capable of controlling driving motors of said tool feed control devices.

4,224,848

CROSS CUTTER FOR ROLLS OF MATERIALS

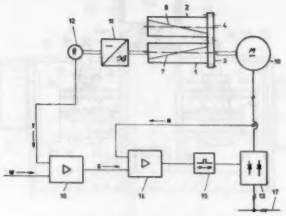
Dieter Beerenwinkel, Düsseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke Atkiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,689

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747256

Int. Cl.[2] B26D *5/24*

U.S. Cl. 83—76 3 Claims



1. A cross cutter for a moving web, comprising coupled cutter rolls; a driving motor directly coupled to the cutter rolls for driving same; asymmetrical means driven by the driving motor in parallel with the cutter rolls for producing a control output corresponding to the actual number of revolutions per unit time of the motor; and means receptive of the control output for controlling the motor speed to synchronize the cutter rolls with the speed of the moving web.

4,224,849

DEVICE FOR DETECTION OF METAL IN A MOVED STRAND

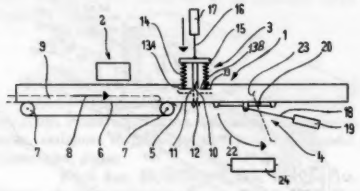
Karlheinz Loser, Karlsruhe, Fed. Rep. of Germany, assignor to Weisert, Loser & Sohn GmbH & Co., Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,197

Claims priority, application Fed. Rep. of Germany, Jan. 5, 1975, 2900280

Int. Cl.[3] B65G *47/34*

U.S. Cl. 83—80 9 Claims



1. Device for detecting and removing metal from a moving strand of highly viscous material, such as gum or the like, comprising:

a guide trough for the strand,

an electronic metal detector for detecting metal in the strand as it moves along the guide trough,

a drop knife disposed above the guide trough,

control means for actuating said drop knife to sever said strand in response to detection of metal in the strand by the metal detector,

and swing valve means opening into the floor of said guide trough for accommodating removal of the severed strand with metal therein.

4,224,850

APPARATUS FOR CUTTING A BLANK SHEET INTO STRIPS AND FOR STACKING THE STRIPS IN ADJOINING COMPARTMENTS SEPARATED BY PARTITIONS

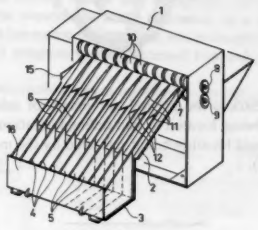
Ismo V. J. Holmi, and Ismo I. Virtanen, both of Pori, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Feb. 23, 1979, Ser. No. 14,430

Claims priority, application Finland, Feb. 27, 1978, 780646

Int. Cl.[3] B26D *7/18*

U.S. Cl. 83—105 10 Claims



1. An apparatus for cutting a blank sheet into strips and for stacking these strips in adjoining compartments separated by partition walls, the apparatus comprising: a frame, at least two superimposed shafts mounted in the frame for rotation in opposite directions; slightly overlapping circular blades mounted in spaced relationship from each other in the axial direction on the shafts, in order to cut the blank sheet fed therebetween and to feed the cut strips in the direction of the feed downward; an inclined slide surface mounted in the frame for receiving the cut strips and having substantially on the same vertical longitudinal plane as the partition walls of the adjoining compartments, guide walls for receiving the cut strips and for guiding each of them into its respective compartment; lateral-transfer trays mounted on the inclined slide surface and extending, as seen in the direction of the feed, slightly forward and downward from the circular blades, being also inclined in the lateral direction and extending in the lateral direction from between two adjacent guide walls over one guide wall, at maximum as far as the vertical longitudinal plane running through a cutting point of one edge of the strip entering the lateral-transfer tray and at minimum through the vertical longitudinal plane which passes through a center point between the cutting points of the cut strip, in order to slant the cut strips and to cause that edge which is inclined lower to slide along the adjacent guide wall, so that the upper edge will fall between the guide walls before the strip falls into the compartment.

4,224,851

KNOCKOUT FOR PUNCH SCRAP

Hiroto Imai, Fukuyama, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,165

Int. Cl.[3] B26D *7/00*

U.S. Cl. 83—117 2 Claims

1. A scrap knockout for use with a rotary punching apparatus, comprising in combination:

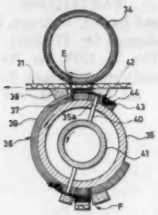
(a) a knife cylinder (35) with an outer peripheral surface;

(b) a blade support (39) attached around said outer peripheral surface;

(c) punch blades (37) held by and extending out of said blade support (39) with apertures (37') defined in said blades, said punch blades (37) defining a location for punched scrap;

(d) an anvil cylinder (34) disposed for cooperation with said knife cylinder (35) having a periphery against which the blades (37) are forced so as to punch a work piece fed in between said knife cylinder and said anvil cylinder; and,

(e) a scrap knockout lever (42) pivoted at one end to said blade support (39), the other end being free, said lever (42) being so disposed as to pass through said aperture (37)



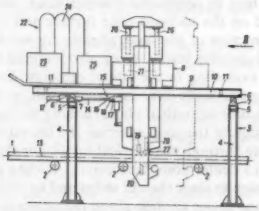
which restricts the pivotal movement of said lever, said free end being located in said defined location, the formed scrap at said location being removed by the motion of said lever (42).

4,224,852

SHEARING MACHINE TO BE USED FOR A RUN-OUT ROLLER TABLE OF A CONTINUOUS CASTING PLANT

Franz Kagerhuber, Traun, and Wolfgang Lederer, Haid, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Nov. 7, 1978, Ser. No. 958,421
Claims priority, application Austria, Nov. 22, 1977, 8336/77
Int. Cl.[3] B23D 25/04
U.S. Cl. 83—319 3 Claims



3. In a shearing machine to be used for a run-out roller table of a continuous casting plant, in particular a multiple-strand continuous casting plant for billets, of the type including a machine frame, a shearing frame mounted on said machine frame so as to be displaceable in the longitudinal direction of said run-out roller table, an upper and a lower cutter arranged in said shearing frame, and drive and control aggregates provided for moving said upper and said lower cutters towards and away from each other, the improvement which is characterized in that:

said machine frame exceeds said run-out roller table in terms of height,

said shearing frame rests loosely on said machine frame,

said drive and control aggregates are mounted to said shearing frame and form a construction unit with said shearing frame, and

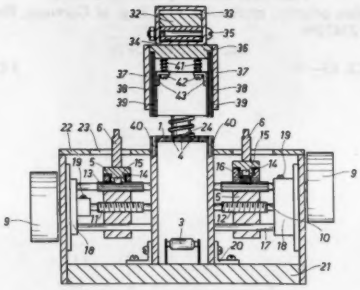
a displacement mechanism is fastened to said machine frame and engages said shearing frame, a hook coupling being provided for connecting said displacement mechanism to said shearing frame, said hook coupling permitting vertical movement of said shearing frame.

4,224,853

DIAPOSITIVE TRIMMER

Matti K. Ruotsalainen, Neitsytsaarentie 8 E 25, 00960 Helsinki 96, Finland

Filed Mar. 29, 1978, Ser. No. 891,281
Claims priority, application Finland, Apr. 5, 1977, 771070
Int. Cl.[3] B26D 7/16
U.S. Cl. 83—412 3 Claims



1. An apparatus for trimming a diapositive comprising:

(a) a perforated plate for positioning the diapositive;

(b) at least one trimming angle for forming a trimming area over the diapositive on the positioning plate; and

(c) a cutter which comprises:

(1) a frame for cutting the angle and diapositive at a predetermined width; and

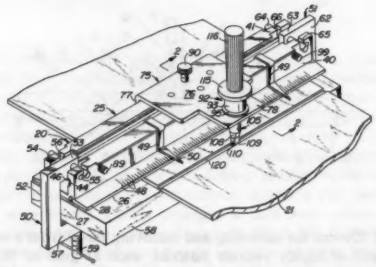
(2) at least one punching pin for perforating both the angle and the diapositive, the positioning plate provided with a corresponding number of holes to allow for complete perforation of the angle and the diapositive.

4,224,854

SHEET CUTTING AND SCORING DEVICE AND METHOD

Joseph J. Malacheski, and Richard J. Zenda, both of 32 Warner St., Plains, Pa. 18705

Filed Sep. 1, 1978, Ser. No. 938,799
Int. Cl.[3] B26D 1/06, 3/06, 5/10, 7/02
U.S. Cl. 83—745 6 Claims



1. A sheet cutting and scoring device comprising an elongate body for positioning on one face of a sheet to be worked, track means extending longitudinally along said body, a carriage on said track means for movement along said body, a lateral extension on said carriage extending laterally beyond said body for movement therealong over the sheet, a tool holder carried by said extension, and a tool depending from said extension for movement therewith in cutting engagement with the sheet, said tool holder comprising an upstanding hollow cylinder fixed to said extension outboard of said body, and said tool

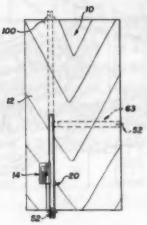
comprising a shank depending from said cylinder and vertically slidable toward and away from the sheet to be worked, a cutting element on the lower end of said shank for engagement with the sheet, and resilient compression means in said cylinder urging said shank downwardly for engaging the cutting element with the sheet.

4,224,855

POWER SAW GUIDING APPARATUS

Emile A. Des Roches, 6936 Jubilee Ave., Burnaby, British Columbia, Canada (V5J 4B3)

Filed Apr. 20, 1979, Ser. No. 31,893
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **6 Claims**



1. Guiding apparatus for a power saw movable over a workpiece and comprising a guide bar having side and end edges, a saw-guiding member on the guide bar near each side edge, said saw-guiding members being parallel to the longitudinal axis of the guide bar and extending between the end edges, a cross bar near one end edge of the guide bar with said bars arranged to form a T-square, said cross bar having opposite end edges equidistantly spaced from adjacent saw-guiding members, securing means for releasably attaching the guide bar to the workpiece to extend over a surface thereof with the cross bar alongside one edge of said workpiece, a slide connector securable to the power saw for slidingly and matingly engaging a selected one of the saw-guiding members as the power saw is advanced along the surface of the workpiece during a cutting stroke, said guide bar having a longitudinal slot at one end edge, said longitudinal slot being located midway between the saw guiding members, and said securing means including a pivot member enterable through the longitudinal slot into the workpiece whereby the guide bar is swingable about said pivot member to locate the cross bar at an opposite edge of said workpiece.

4,224,856

WAVESHAPE MEMORY TYPE KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Shigeo Ando, Iwata, and Takayasu Kondou, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 30, 1978, Ser. No. 938,254
Claims priority, application Japan, Sep. 5, 1977, 52/105793
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.19 **14 Claims**

1. An electronic musical instrument of keyboard type having a plurality of keys, comprising:

a plurality of waveshape storage means storing different waveshapes and accessible in response to an operation of tone selection means associated with said keys to deliver said different waveshapes, said waveshapes having the same fundamental frequency but different harmonic content;

mixing means for obtaining a composite waveshape of said different waveshapes mixed at a variable mixing ratio according to at least one variable parameter;

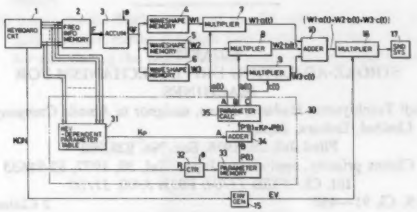
conversion means for converting said composite waveshape to a corresponding musical tone;

first information generating means for generating first information representing a time-dependent parameter related with time following depression of a key;

second information generating means for generating second information representing a key-dependent parameter related with the pitch of a tone assigned to the depressed key; and

parameter generating means for generating said variable parameter on the basis of said first information and said second information, thereby producing in cooperation with said mixing means said composite waveshape, said composite waveshape being indicative of a musical tone having a harmonic content that varies in accordance with the pitch assigned to the depressed key and with lapse of time.

8. In an electronic musical instrument including a keyboard



circuit for selecting a note, a waveshape information generating means for obtaining composite waveshape information, and a sound system for producing sound from said composite waveshape information, the improvement comprising:

first information generating means responsive to an output of said keyboard circuit for providing a time-dependent signal indicative of a variation in tone color with lapse of time of a selected note;

second information generating means responsive to another output of said keyboard circuit for providing a key-dependent signal indicative of a variation in tone color with the pitch of said selected note; and

parameter generating means responsive to said time-dependent signal and said key-dependent signal for obtaining a plurality of mixing parameters representative of pitch-time varying information;

wherein said waveshape information generating means is responsive to said output of said keyboard circuit and said plurality of mixing parameters.

4,224,857

TUNABLE STRING HOLDER FOR MUSICAL INSTRUMENT

Peter Infeld, Vienna, Austria, assignor to Dr. Thomastik und Mitarbeiter Ohg, Vienna, Austria

Filed Oct. 19, 1978, Ser. No. 952,684
Claims priority, application Austria, Oct. 21, 1977, 755577
Int. Cl.³ G10D *3/12*
U.S. Cl. 84—302 **10 Claims**

1. A violin tailpiece for anchoring longitudinally extending violin strings that are spanned over a bridge, said tailpiece comprising:

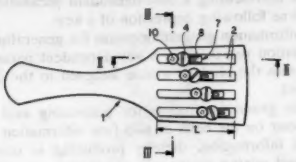
a support adapted to be secured to a string instrument and formed with a plurality of generally parallel longitudinal guides;

respective support blocks displaceable through relatively long longitudinal distances in said guides;

means for arresting each of said blocks at any of a multiplicity of longitudinally offset positions in the respective guide;

respective string anchors securable to respective strings of

said instrument and displaceable on the respective blocks through relatively short longitudinal distances; and



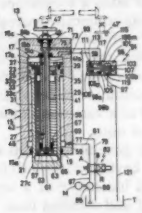
means for steplessly displacing each of said anchors through said short distances on the respective block and for fixing each of said anchors against displacement on the respective block.

4,224,858

STROKE-ADJUSTING DRIVE MECHANISM FOR MACHINES

Yuji Tsuchiyama, Hadano, Japan, assignor to Amada Company, Limited, Isehara, Japan

Filed Jul. 28, 1978, Ser. No. 928,900
Claims priority, application Japan, Jul. 30, 1977, 52-91633
Int. Cl.³ F15B *13/04;* F01B *3/00, 31/00*
U.S. Cl. 91—410 **2 Claims**



1. Apparatus for adjusting the stroke of a reciprocating member in a hydraulic drive mechanism comprising a cylinder, a piston movable in said cylinder, said piston defining a first chamber in said cylinder and having a piston rod extending outwardly from said cylinder, a conduit connected to hydraulically communicate said first chamber with hydraulic pump means for supplying pressurized fluid to said first chamber to move said piston through a stroke in said cylinder, restricting valve means arranged between said first chamber and said conduit for restricting flow therebetween, stroke adjusting means arranged to be adjustably positioned relative to said piston rod for urging said restricting valve means into flow restricting relation between said first chamber and said conduit at a predetermined position along said stroke,

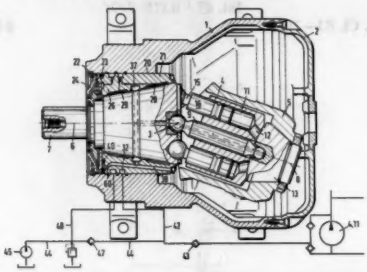
said piston rod being formed with a cylindrical chamber having a threaded inner wall, said stroke adjusting means including a shaft member rotatably arranged in said cylindrical chamber and a rotatable adjusting member threadably engaged with said threaded inner wall, said shaft member extending slidably through said adjusting member, said restricting valve means being located at the end of said shaft member, and said adjusting member contacting said restricting valve means to urge the same into said flow restricting relation when said shaft member and said adjusting member are rotated to axially move said adjusting member in said cylindrical chamber and said piston is subsequently moved through its stroke in said cylinder.

4,224,859

AXIAL PISTON MACHINE

Siegfried Eisenmann, Aulendorf, and Dieter Hancke, Sigmaringendorf-Laucherthal, both of Fed. Rep. of Germany, assignors to Fuerstlich Hohenzollernsche Huettenverwaltung, Lauchertal, Lauchertal-Sigmaringen, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,492
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815476
Int. Cl.³ F01B *13/04*
U.S. Cl. 91—488 **10 Claims**



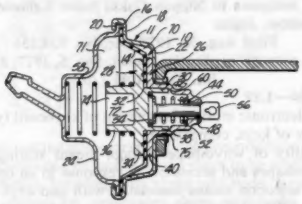
1. An axial piston machine, such as axial piston pump or axial piston engine, comprising a drive shaft; a socket ring secured to one end of said drive shaft; a rotary cylinder block having its axis of rotation inclined relative to the axis of said drive shaft; a plurality of cylinder-and-piston units arranged in said cylinder block and each having a piston rod linked to said socket ring by universal ball-and-socket joints; hydrostatic radial bearing means for said drive shaft including a bearing block having a conical boring surrounding a portion of said drive shaft and a conical bearing member integral with said drive shaft portion in said boring and defining a gap therebetween; throttling means opening into said gap to deliver a pressure fluid therein, the pressure of said fluid being proportional to the working pressure of said machine; means for maintaining a predetermined minimum pressure of said pressure fluid; and self-adjusting hydrostatic axial bearing means acting in the axial direction against the expanding sloping surface of said conical part.

4,224,860

DIAPHRAGM ASSEMBLY

Larry Neighbor, Howell, and George Roche, Flint, both of Mich., assignors to BLD Products, Ltd., Flint, Mich.

Filed Aug. 3, 1978, Ser. No. 930,691
Int. Cl.³ F01B *19/00;* F16J *3/02*
U.S. Cl. 92—100 **3 Claims**



1. A pressure operated servomotor comprising; a housing, diaphragm disposed in said housing and dividing it into a pair of chambers, a pair of backing elements disposed in said chambers, respectively, at opposite sides of said diaphragm, one

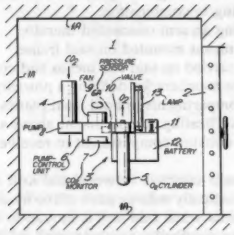
backing element having a portion protruding through said diaphragm, the other element of said pair of elements having an axially extending portion forming a recess receiving said protruding portion, said protruding portion and axially extending portion contacting each other at a point remote from said diaphragm, said backing elements having opposed flanges sealingly engaging oppositely facing annular portions surrounding said opening, said elements being made of plastic material containing a random distribution of glass fibers, said fibers being operative to convey heat from the surface of said axially extending portion to said protruding portion to said point remote from said diaphragm, said elements being sonically welded together at said point remote from said diaphragm to effect a sonic weld to maintain said flanges in fixed relationship and sealing engagement with said annular portions.

4,224,861

VAULTS AND STRONGROOMS

Raymond L. Sands, Shirley, England, assignor to Chubb & Son's Lock and Safe Company, Limited, London, England

Filed Jan. 31, 1979, Ser. No. 8,023
Int. Cl.³ B64D *13/00*
U.S. Cl. 98—1.5 **10 Claims**



1. In a vault having impermeable walls defining an enclosure and a door to seal said enclosure air-tight, a monitor device communicating with the atmosphere within the sealed enclosure of the vault to monitor a first of two variables of said atmosphere, said first variable being the carbon-dioxide content of the atmosphere within said sealed enclosure, first means in said sealed enclosure coupled with said monitor device for responding to the condition in which the monitored carbon-dioxide content exceeds a predetermined value to remove carbon-dioxide from said atmosphere, and second means in said sealed enclosure for maintaining the second of said two variables of said atmosphere within predetermined limits, said second means including gas-storage means for supplying oxygen to said sealed enclosure by release from said gas-storage means, and means for regulating supply of said oxygen from said gas-storage means to said sealed enclosure to maintain the said second variable within said limits.

4,224,862

APPARATUS FOR TRANSFERRING HEAT TO FOOD ARTICLES

Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222

Filed Sep. 22, 1977, Ser. No. 835,808
Int. Cl.³ A47J *27/21*
U.S. Cl. 99—331 **1 Claim**

1. Apparatus for transferring heat to food articles contained within a chamber without subjecting those food articles to a temperature exceeding 212° F. while maintaining the humidity within the chamber above that of the atmosphere outside of the chamber, comprising:

(a) a chamber having vent means between it and the atmosphere outside thereof that are intended to be opened and closed;

(b) a plurality of vertically spaced support means located in the upper portion of said chamber for supporting food articles within said chamber, said food support means being made of a heat conductive material;

(c) radiator means located in the upper portion of said chamber adjacent to and on opposite sides of each of said load support means;

(d) sump means located in the lower portion of said chamber for containing liquid water;

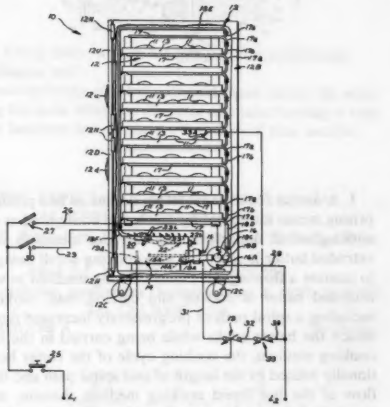
(e) heater means located within said sump means;

(f) control means connected to said heater means for controlling the desired temperature to which the liquid water is to be heated and maintained by said heater means, with said temperature not to exceed 212° $F_.$;

(g) means for regulating the amount of liquid water that is contained within said sump means;

(h) hollow conduit means fluid-connecting said sump means and each of said radiator means and having a return conduit to said sump means to form a closed-loop transfer means;

(i) pump means fluid-connected to said sump means and to said radiator means through said hollow conduit means for circulating the heated liquid water between said sump



means and said radiator means and also returning the same to said sump means via said hollow conduit means such that hot water is continuously circulated through said chamber for heating food supported by said food support means; and

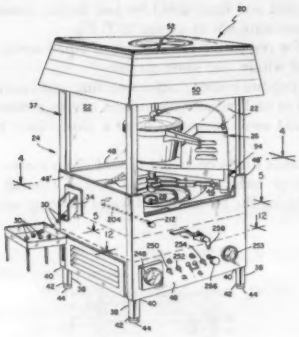
(j) said sump means having an opening fluid-connected to said chamber through which water vapor produced therein can be first transferred from said sump means to said chamber and subsequently discharged from said chamber to the atmosphere outside of said chamber by operation of means for controlling flow through said opening between said sump means and said chamber and of said vent means, said means for controlling flow through said opening comprising a set of interlinked louvers pivotally connected across said opening and an operating lever connected to said louvers to adjustably vary the position of said louvers and thereby the opening between a variety of positions ranging between a minimum closure and a maximum closure of said opening, for regulating the amount of water vapor that passes upwardly by convection through said opening into said chamber for contact with said food articles.

4,224,863

DONUT MAKING DEVICES

Eugene F. Barber, and Steven C. Barber, both of Minneapolis, Minn., assignors to Wee Donuts, Inc., Princeton, N.J.

Filed Mar. 23, 1979, Ser. No. 23,077
Int. Cl.[3] A47J 37/12
U.S. Cl. 99—331 13 Claims



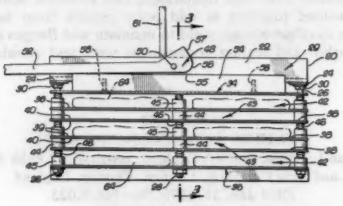
1. A device for manufacturing donuts or like products comprising means for extruding raw batter configured as desired; a cooking scroll underlying the extruder means in which the extruded batter is received, said cooking scroll being adapted to contain a flowing hot liquid cooking medium in which the extruded batter is cooked and carried, said cooking scroll including a spiral path of progressively increased depth along which the batter cooks while being carried in the hot liquid cooking medium, the cooking cycle of the batter being functionally related to the length of said spiral path and the rate of flow of the hot liquid cooking medium thereon; means for circulating the cooking medium through said cooking scroll and producing a flow of the cooking medium along said spiral path thereof; means for regulating the temperature of the cooking medium contained in said cooking scroll; means for controlling the flow of the cooking medium in said cooking scroll; means operatively connected to said cooking scroll for reversing the disposition of the partially cooked product in the cooking medium at a substantially median point in said spiral path; said means for reversing the disposition of the partially cooked product in the cooking medium comprising a paddle rotatably mounted in said scroll and being disposed in said spiral path; and means for rotating said paddle, the partially cooked product being drawn onto said paddle by the flowing cooking medium in said spiral path; said means for rotating said paddle comprising a motor driven cartridge comprising an oil-tight casing, a shaft axially mounted in said casing and having first and second ends emergent therefrom, said first end thereof being connected to said paddle and a bearing arrangement mounted on said shaft within said casing including first and second axially aligned lip seals, first and second axially aligned bearings, and high temperature silicon grease loaded between said lip seals and said bearings, a gear, said gear being mounted on said second end of said emergent shaft, and a motor operatively connected to said gear for driving said paddle.

4,224,864

APPARATUS FOR COOKING MEAT PATTIES AND THE LIKE

Russell C. Wendell, 16262 Tisbury Cir., Huntington Beach, Calif. 92649

Division of Ser. No. 724,571, Sep. 20, 1976, abandoned, which is a continuation of Ser. No. 624,583, Oct. 22, 1975, abandoned. This application Nov. 2, 1978, Ser. No. 957,319
Int. Cl.[3] A47J 37/12
U.S. Cl. 99—349 10 Claims



1. A device for cooking meat patties and the like in a deep-fat cooker, including in combination:

a frame having an arm connected thereto;

vertical rod means mounted on said frame;

plate means carried on said rod means and comprising horizontal plate members for defining a plurality of interstitial cooking compartments to hold meat patties and vertically spaced-apart heating compartments above and below each interstitial cooking compartment to receive the hot cooking fat;

actuating means coupled between said arm and said plate means to vertically enlarge each of the interstitial cooking compartments when said arm is moved to a second position and to vertically contract each of the interstitial cooking compartments when said arm is moved to a first position; and

spring biasing means engaging each of the plate members for allowing the aforementioned vertical enlargement and contraction of the interstitial cooking compartments without changing the vertical spacing in the heating compartments.

4,224,865

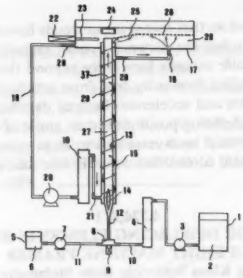
PROCESS AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF CHEESE

Gerard Grosclaude, Neauphele le Vieux; Jean Regnier, Issy les Moulineaux, and Marcel Cavarroc, Velizy, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Division of Ser. No. 729,072, Oct. 4, 1976, Pat. No. 4,131,688. This application Jun. 6, 1978, Ser. No. 913,103
Claims priority, application France, Oct. 3, 1975, 75 30362
Int. Cl.[3] A23C 19/024
U.S. Cl. 99—453 11 Claims

1. Apparatus for the continuous manufacture of cheese from ultrafiltration retentate from milk or a milk product capable of subsequent transformation into cheese until the liquid has a solids content about that of the cheese to be made to which additional constituents have been added to obtain a liquid cheese precursor, comprising means for heating the cheese precursor to a temperature higher than a selected temperature of coagulation, mixing means for intimately mixing the heated cheese precursor with rennet, said mixing means being in permanent communication with the inlet of at least one elongate coagulation cylinder having an inlet at one end and a continuously open outlet end at the end of the cylinder removed from the inlet, and having a smooth-walled interior and an interior and outlet cross section which is substantially the cross section of the desired cheese, means for continuously

feeding the liquid cheese precursor to the cylinder inlet, means for controlling the rate of flow of the incoming heated mixture so that the flow of the mixture or mass inside said coagulation cylinder is laminar at all points, means for maintaining the temperature of the interior wall of said coagulation cylinder below that selected for coagulation to provide a substantially plane coagulation front at right angles to the axis of said coagulation cylinder, cutter means for cutting slices of curd at the outlet open end of said coagulation cylinder for producing slices of curd the cross section of each of which is substantially the internal and outlet cross-section of the coagulation cylinder, and means for transferring the slices of curd away from said coagulation cylinder and cutter means, wherein the means for transferring the slices of curd away from said coagulation cylinder and cutter means comprises a floatation tank wherein the outlet end of said coagulation cylinder opens into said floatation tank adapted to contain a liquid alimentary medium



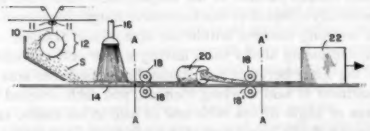
the density of which is at least that of the slice of curd cut at said open end, the apparatus further comprising a heat exchanger means and a closed circuit for circulating the liquid medium including means for pumping the liquid medium from said floatation tank through the heat exchanger means for regulating the temperature of the liquid medium and into a thermostatically controlled shell said shell being spaced around said coagulation cylinder and constituting said means for maintaining the temperature of the interior wall thereof, said shell being connected, in turn, back to said floatation tank, said apparatus further comprising means for pumping cheese precursor and rennet to said mixing means and means for dividing and distributing the incoming mixture of cheese precursor and rennet from said mixing means, proximate to the inlet of the coagulation cylinder, wherein said means for dividing and distributing the incoming mixture is shaped to distribute the mixture of cheese precursor and rennet along the interior wall of said coagulation cylinder.

4,224,866

TREATMENT OF RAYON STAPLE

Charles J. Geyer, Jr., Berwyn, and Ben E. White, Wayne, both of Pa., assignors to Fiber Associates, Incorporated, Berwyn, Pa.

Filed Sep. 13, 1979, Ser. No. 75,118
Int. Cl.³ B30B *13/00*; B06B *1/00*
U.S. Cl. 100—40 **4 Claims**



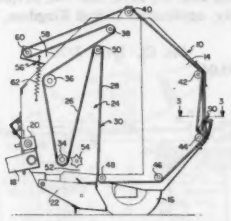
1. In a process for treating a blanket of rayon fibers with liquid wherein said blanket is conveyed along a web and wherein liquid is pressed out of said fibers at least once prior to drying, the steps which comprise turning in and folding the edges of said blanket on themselves during advancement of said blanket along said web, and thereafter subjecting said blanket including its folded portion to compression.

4,224,867

CROP LOADING MONITOR FOR ROTARY BALERS

Melvin V. Gaeddert, and Rex O. Weigand, both of Newton, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Mar. 21, 1979, Ser. No. 22,445
Int. Cl.³ B30B *5/06*; A01D *39/00*; B30B *15/00*
U.S. Cl. 100—88 **7 Claims**



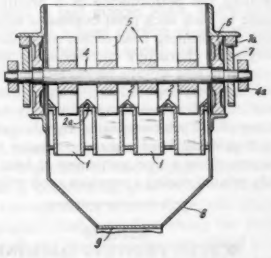
1. In a rotary baler, a crop loading monitor comprising:
signal means; and
apparatus operably coupled with said signal means for actuating the same when the diameter of a bale forming in said baler becomes less at one portion thereof than another.

4,224,868

PRESS, ESPECIALLY FOR PRESSING STRAW MATERIAL INTO BRIQUETS

Mogens R. Berthelsen, "Rislykke", Vejleby, 4970 Redby, Denmark

Filed Jul. 31, 1978, Ser. No. 929,590
Claims priority, application Denmark, Aug. 4, 1977, 3490/77
Int. Cl.² B30B *9/30*
U.S. Cl. 100—98 A **10 Claims**



1. A press, especially for pressing straw material or the like into briquets while preventing such material from being cut, which comprises a plurality of press chambers of substantially uniform size and shape aligned in a straight line tandem with respect to each other, each of said press chambers comprising an entrance region, an exit, and an intermediate compaction zone for passage of said material therebetween, the widths of said entrance, exit, and intermediate compaction zone being substantially uniform, a number of elongate piston means associated with corresponding ones of said chambers; said piston means each being reciprocable into and from said compaction zone of its associated chamber and having a given compaction face area lesser than the area bound by the marginal edges of

said chamber at the entrance region to said compaction zone to define a clearance between the piston means and said edges in that region, said piston means being further characterized in that its terminal portion is narrow enough to pass through said entrance region, exit and intermediate compaction zone of the chamber with which it is associated without contacting the marginal side portions of said chamber, and wide enough to compact said material within said chamber without cutting or severing said material within said chamber.

4,224,869

PARALLEL LINE PRINTER

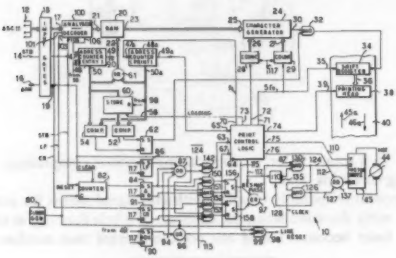
Claude Morin, Meudon, France, assignor to Enertec, Montrouge, France

Filed Jun. 27, 1978, Ser. No. 919,685

Claims priority, application United Kingdom, Jun. 28, 1977, 26958/77

Int. Cl.³ B41J 7/70

U.S. Cl. 101—93.04 **32 Claims**



1. Parallel line printing apparatus for printing successive lines of characters across a print support material comprising:

parallel printing head means arranged to extend in the direction of a line across the print support material;

electrical signal storage means for receiving and storing electrical signals representative of characters to be printed, and storage means having a capacity sufficient to store electrical signals corresponding to a plurality of characters; and

print control means for receiving print command signals and controlling the performance of a printing operation in response to each such print command signal received by causing said printing head means to substantially simultaneously print characters corresponding to electrical signals stored in said storage means along a line on the print support material opposite said printing head means;

said print control means being selectively responsive to at least one of the print command signals received for causing said printing head means to resume the printing of characters along a line containing at least one character already printed during a previous such printing operation.

4,224,870

SCREEN PRINTING MACHINE

Budai Mikulas, Pelikanstrasse 5, 9004 St. Gallen, Switzerland

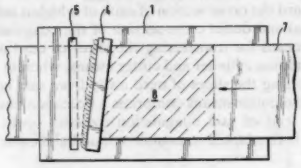
Filed Mar. 9, 1978, Ser. No. 884,810

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710947

Int. Cl.² B41L 13/02

U.S. Cl. 101—123 **3 Claims**

1. A screen printing machine for a web intermittently pulled forwardly to receive a succession of closely interpositioned prints extending lengthwise on the web, said machine comprising a printing table having a flat top over which said web is intermittently pulled, a flat stationary printing screen above said table substantially parallel therewith and adapted to contact said web thereon, and a printing material knife reciprocating linearly over said screen in the longitudinal direction of said web and having an overall reciprocating stroke length that is greater than the printing area of said screen to permit the knife to decelerate and accelerate beyond its effective printing stroke when rapidly reciprocated, said table having a transverse slot which is at a right angle to said stroke and the length of said web and down through which said web is pulled away from the printing table's said top and said screen, said slot



being positioned so that said screen extends forwardly beyond the slot and so that the forward overall reciprocating stroke limit of said knife extends forwardly beyond the slot and the web can by pulled forwardly free from smudging while said knife decelerates and accelerates beyond its effective printing stroke, said knife being positioned at an angle of from 2° to 5° with respect to said transverse slot so as to prevent the knife from pushing said screen downwardly into said slot.

4,224,871

MEANS FOR DISPLACING ELEMENTS BETWEEN UPRIGHT MACHINE FRAMES

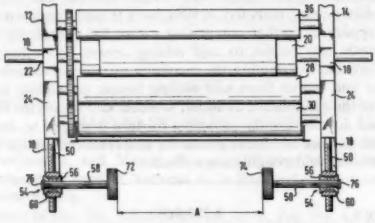
Christoph Hars; Klaus Schirrich; Bodo Steinmeier, all of Bielefeld, and Wilfried Tappe, Herford, all of Fed. Rep. of Germany, assignors to Fischer & Krecke, Bielefeld, Fed. Rep. of Germany

Filed May 30, 1978, Ser. No. 911,000

Claims priority, application Fed. Rep. of Germany, May 31, 1977, 2724531

Int. Cl.³ B41F 3/46, 13/44

U.S. Cl. 101—248 **8 Claims**



1. Means for the adjustment, in a direction substantially perpendicular to its longitudinal axis, of a working element displaceably arranged between the two frames of a pedestal machine spaced from one another by a distance greater than the reach of a human's hands, comprising

(a) two rotatable drive shafts that are each mounted on one of said frames parallel to the displacement direction, and operatively coupled to the respective longitudinal ends of said working element within the area of said frames;

(b) two adjusting shafts each having a free end extending into the space between said frames but outside the area of adjustment of said working element, and each coupled by means of angle drives with one of said drive shafts, said adjusting shafts being movable from their working position in which they extend toward one another in substantially the same vertical plane into the space between said

frames to a rest position in which they are substantially clear of said space; and

(c) a hand-wheel attached to said free ends of each of said adjusting shafts;

(d) whereby simultaneous adjustment of said working element for both sides of said frame can be made by a single operator during operation of said machine, while access to the space is made available when the machine is at rest.

4,224,872

LABEL STRIP JAM PREVENTING MECHANISM FOR HAND LABELER

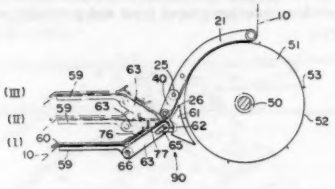
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,421

Claims priority, application Japan, Sep. 5, 1977, 52/105795

Int. Cl.² B41F *1/08*; B65C *9/18, 11/02*

U.S. Cl. 101—288 **18 Claims**



1. A hand labeler, comprising:

a frame;

a platen supported on said frame; a printing head supported by said frame and opposable to a label on said platen for printing the label on said platen as said platen is brought into engagement with said printing head;

a feeding roller rotatably mounted on said frame for feeding a continuous label strip to said platen as said feeding roller is rotated; means for rotating said feeding roller;

a label strip charging mechanism for directing the label strip to pass by and to engage said feeding roller;

said platen being placed for receiving the label strip after the label strip has moved past said charging mechanism and said feeding roller; means for alternately moving said platen toward and away from said printing head for bringing a label on said platen into engagement with said printing head, as said platen is moved toward said printing head; said motion of said platen being with respect to said label strip charging mechanism;

a label jam preventing mechanism comprising a passage plate pivotally connected to said platen for defining a continuous path up to said platen; said passage plate also communicating with said label strip charging mechanism for defining a continuous path from said charging mechanism to said passage plate; said passage plate being swingable with respect to said charging mechanism and with respect to said platen as said platen moves;

label strip holding means on said passage plate for holding the label strip to said passage plate as said passage plate moves toward and away from said printing head, thereby preventing the label strip from becoming slack.

4,224,873

CLAMPING GRIPPER

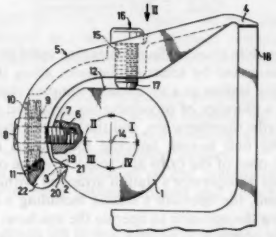
Erich G. Wieland, Wurzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,573

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1977, 2725035

Int. Cl.² B41F *21/04*

U.S. Cl. 101—409 **5 Claims**



1. A clamping gripper for a sheet transfer mechanism in a printing machine, said clamping gripper comprising:

a gripper finger having a gripper tip at a first end and a gripper base at a second end of said gripper finger;

means for directly securing said gripper finger to an oscillating gripper shaft in the sheet transfer mechanism, said securing means including a securing screw passing through said gripper finger between said gripper base and said gripper tip and adapted to be directly received in a threaded hole in said gripper shaft, and a spring means retained between a head portion of said securing screw and said gripper finger to spring bias said gripper finger toward said gripper shaft;

a hinge joint between said gripper base and said gripper shaft for allowing relative pivotal movement between said gripper finger and said gripper shaft during operation of said sheet transfer mechanism, said hinge joint being formed by a portion of said gripper base having a first shape and a cooperating portion of said gripper shaft having a corresponding second shape, said shaped portion of said gripper shaft extending along the length of said gripper shaft and parallel to the axis of said gripper shaft;

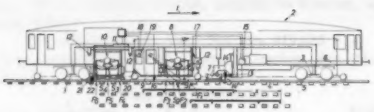
an adjusting screw for adjusting the spacing between said gripper tip and a gripper abutment surface of said sheet transfer mechanism, said adjusting screw passing through said gripper finger between said securing screw and said gripper tip and having a journaled end which contacts a face portion of said gripper shaft whereby oscillation of said gripper shaft moves said gripper tip into and out of contact with said abutment surface;

said gripper finger extending around only a portion of the periphery of said gripper shaft so that said gripper finger is removable from said gripper shaft by unsecuring said securing screw from said gripper shaft, said gripper finger being removable while leaving said gripper shaft in the printing machine.

4,224,874
ALERT SYSTEM IN A MOBILE TRACK SURFACING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 860,978, Dec. 15, 1977, abandoned, which is a continuation of Ser. No. 688,877, May 21, 1976, abandoned. This application Jul. 20, 1978, Ser. No. 926,947
Claims priority, application Austria, Jun. 24, 1975, 4820/75
Int. Cl.[2] E01B 27/16
U.S. Cl. 104—12 **7 Claims**



1. In a mobile track surfacing machine arranged for intermittent advancement by selected distances along the track from one tamping station to a succeeding tamping station, the track including a plurality of successive ties arranged on ballast and defining cribs therebetween, and the machine carrying a track tie tamping unit having tamping tool means immersible in respective ones of the cribs at a respective one of the tamping stations and an operator's station arranged within view of the tamping unit, the operator's station including a control panel for enabling the operator to operate the machine: apparatus for alerting the operator to an approach to the succeeding tamping station as the machine advances thereto, and for enabling the operator to center the tamping tool means between the successive ties at the succeeding tamping station, the apparatus comprising the combination of

(a) a means for defining the selected distances,

(b) a spraying nozzle mounted on the machine close to the surface of the ballast and arranged to produce a relatively small colored marker of a size of the order of about two to three ballast pieces in a respective one of the cribs,

(c) a signal means at the operator's station within view of the operator for generating a progressively changing light alert signal visibly indicating to the operator an approach to the succeeding tamping station during the advancement of the machine and including a final signal indicating the succeeding tamping station, and

(d) means for controlling the spraying nozzle for producing successive ones of the colored markers and for controlling the signal means for generating the progressively changing alert light signal,

(1) the controlling means operatively connecting the distance defining means, the spraying nozzle and the signal means in response to a selected distance defined by the means for defining the selected distances whereby the progressively changing alert signal visibly indicates to the operator the approach to the succeeding tamping station as the advancing machine approaches the succeeding tamping station, the final signal indicates to the operator the arrival at the succeeding tamping station and the colored marker enables the operator to center the tamping tool means.

4,224,875
STATIC SWITCHING APPARATUS FOR PASSENGER VEHICLE

Willis H. Knippel, and Thomas R. Schmitz, both of Palos Park, Ill., assignors to Pullman Incorporated, Chicago, Ill.

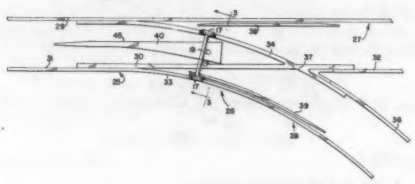
Continuation of Ser. No. 699,287, Jun. 24, 1976, abandoned. This application Jun. 15, 1978, Ser. No. 915,843
Int. Cl.[2] E01B 7/00
U.S. Cl. 104—130 **5 Claims**

1. A switching apparatus adapted for use with an associated railway transportation vehicle comprising:

vehicle supporting track means for providing guided movement of said vehicle including a main line track portion having a switching junction and a switch track portion merged with said main line track portion at said switching junction,

said main line track portion including a first continuous straight flanged track rail portion extending through said switching junction, and a pair of spaced second straight flanged track rail portions each second straight flanged track portion disposed on a respective first and second end of said switching junction in spaced, generally parallel relation to said first straight flanged track rail portion, and a continuous straight flat track rail coextensive with and adjacent to portions of each of said second flanged track rail portions, and extending therebetween and through said switching junction spaced from and generally parallel to said first straight flanged track rail portion,

said switch track portion including first and second curved flanged track portions, said first curved flanged track portion being merged with said second straight flanged track portion disposed at the first end of said switching junction and extending therefrom away from said main line track portion, said second curved flanged track portion being disposed at the second end of said switching junction and extending therefrom away from said main line portion spaced from and in generally parallel relation to said first curved flanged track portion, and a continuous curved flat track rail coextensive with and adjacent to portions of each of said first straight flanged track rail portion and said second curved flanged track rail portion, respectively, and extending therebetween through said switching junction spaced from and generally parallel to



said first curved flanged track rail portion, said curved flat track rail intersecting said straight flat track rail intermediate the spaced second straight flanged track rail portions,

said vehicle supporting track means being adapted to engage an associated wheel and axle assembly on said vehicle including a pair of laterally spaced flanged wheels including generally flat rims and radially raised flanges, the top of said flat track rails being disposed below the top of said flanged track rail portions such that said flanged track rail portions are adapted to engage and support said associated wheel rims and said flat track rails are adapted to engage and support said associated raised flanges, said flat track rail portions being of greater width than said associated raised flanges,

said vehicle supporting track means adapted to provide engagement of one of said flanged track rail portions with the rim of one of said wheels of said associated wheel and axle assembly and engagement of one of said flat track rails with the raised flange of the other wheel of the associated wheel and axle assembly as the vehicle moves through said switching junction on one of said main line track portion and said switch track portion,

cam means positioned between said flanged track rail portions and extending substantially at said first end of said junction and adapted to engage associated vehicle mounted cam follower means,

said cam means including first and second cam surfaces extending above the level of said flanged track rail portions and said flat track rails, said first cam surface extending generally parallel to said first continuous straight flanged track rail portion and said second cam surface

extending generally concentrically to said first curved flanged track rail portion, said cam surfaces being adapted to engage said associated cam follower means,

first and second guide rails located inwardly of and generally adjacent to said first straight flanged track rail portion and said first curved flanged track rail portion, respectively, and defining a vehicle wheel flange entrapping space with said respective first flanged track rail portions,

said first and second guide rails being disposed in generally overlapping relation relative to said first and second cam surfaces, respectively, to accommodate continuous guidance of the associated vehicle through said switching junction,

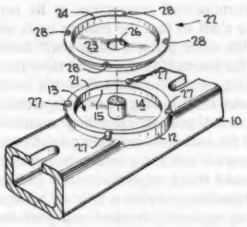
said cam means having each of its cam surfaces adapted to be selectively engaged by said associated cam follower means for selectively guiding said associated vehicle along one of said main line track portion and said switch track portion and said guide rails adapted to thereafter engage one of said wheel flanges of said associated wheel and axle assembly for continuing guidance of said associated vehicle through said switching junction.

4,224,876

CUP-SHAPED BOLSTER BEARING

Glen D. Larsen, Upper Marlboro, Md., assignor to Southern Railway Company, Washington, D.C.

Filed Oct. 12, 1978, Ser. No. 950,680
Int. Cl.[2] B61F 5/16, 5/18; F16C 17/04
U.S. Cl. 105—199 C **5 Claims**



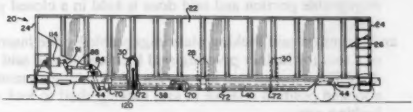
1. In a center plate of a rail car body having a cylindrical boss mating with a cylindrical socket forming a bolster bowl in a truck bolster, the bolster bowl having a flat bottom wall and an upwardly projecting annular rim having an upper annular surface, a king pin extending through centrally aligned openings in the body bolster, the center plate and the bolster bowl about which the truck bolster may rotate relative to the car body, an annular bolster bearing of hardened steel concentric with the center plate and the bolster bowl, the bolster bearing having an annular sidewall lying between the cylindrical boss and the inner surface of the annular rim, lateral and longitudinal forces which develop between the center plate and the bolster bowl during car movement typically being exerted against said annular sidewall by impacting, the improvement wherein said bolster bearing is provided with means for structurally reinforcing said annular sidewall to withstand said forces, said means comprising an annular flange integrally connected with said sidewall at a terminal end thereof, said flange lying parallel to said annular base and fully overlying said upper annular surface of said annular rim, and said base, said sidewall and said flange of said bearing being of substantially the same gauge thickness, whereby said annular flange provides structural stability for said bolster bearing and produces the necessary structural strength for said bearing to resist the lateral and longitudinal forces which develop during car movement over-the-road.

4,224,877

RAILWAY HOPPER CAR CLOSURE ACTUATING MECHANISM

Marvin Stark, Houston, Tex.; Ronald G. Schultz, Country Club Hills, Ill., and Robert A. Spychalski, Michigan City, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed May 26, 1978, Ser. No. 910,059
Int. Cl.[2] B61D 7/04, 7/18, 7/26, 7/28
U.S. Cl. 105—250 **10 Claims**



1. An apparatus for a railway hopper car that opens and closes a door hinged on a bottom of a hopper comprising:

an operating linkage slidably mounted on the bottom of the car,

a pivoting lever and link arrangement pivotally connected between the operating linkage and the door for pivoting the door between open and closed positions in response to sliding movement of the operating linkage,

a locking bar slidably mounted on the bottom of the car hopper for moving between locked and unlocked positions,

said locking bar in the locked position engaging the door in the closed position to hold the door closed, and

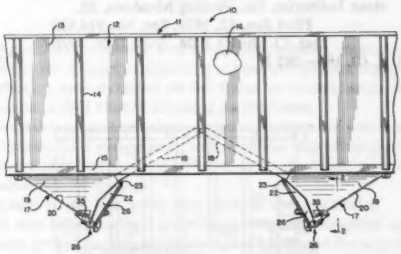
a lock actuator assembly having a drive connection that is separate from the connection between said lever and link arrangement and the operating linkage and being operated by the operating linkage for moving the locking bar to the unlocked position attendant to having the operating linkage move and operate the lever and link arrangement to subsequently open the unlocked door.

4,224,878

HOPPER CAR DOOR LOCKING MECHANISM

Dennis B. Marsden, Griffith, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jun. 16, 1978, Ser. No. 916,396
Int. Cl.[2] B61D 7/02, 7/18, 7/24
U.S. Cl. 105—253 **11 Claims**



1. In a hopper structure for a railway hopper car, the structure having an outlet opening and a door pivoted at its upper edge to the structure and positioned to close said opening, the improvement of a door locking mechanism comprising,

a locking arm connected to said door and projecting outwardly with respect thereto,

a latching element on said locking arm,

a latching mechanism on said door including a jaw mounted on said hopper structure to one side of said opening,

a locking shaft connected to said jaw, said jaw being fixedly mounted on said shaft,

means pivotally mounting said locking shaft and said jaw on said hopper structure,

a locking plate fixedly mounted on said locking shaft for constrained movement therewith and spaced from said jaw,

a pawl pivotally supported on said hopper structure,

said locking plate having a pawl engageable portion therein,

said door being swingable from an open position whereby said latching element initially engages said jaw to pivot the same and said locking shaft and said locking plate in one direction wherein said pawl is engaged by said pawl engageable portion and said door is held in a closed position,

and means on said locking plate engageable by the insertion of a tool for further pivoting said locking plate in said one direction wherein said jaw moves said latching element to a locked position relative to said locking shaft to lock said locking arm.

11. A hopper structure for a railway hopper car, including a hopper having an outlet opening and a door having its upper edge pivotally connected with the hopper and positioned to close said opening and having an imroved door locking mechanism for locking the door to the hopper and comprising,

door closure means connected with said door and projecting outwardly with respect thereto and having a jaw engaging element,

locking means on the hopper adjacent the door opening and including a pivotally mounted locking shaft having mounted in spaced positions thereon a jaw member and a locking member with a pawl engageable portion and said members being constrained for movement with the locking shaft and said locking means further including a pawl engageable with the pawl engageable portion,

said door being swingable from an open position towards a closed position whereby said jaw engaging element is positioned to initially engage said jaw member to pivot said locking member into engagement with said pawl wherein said pawl is engaged by said pawl engageable portion and said door is in a closed position,

and operating means on said locking member engageable by insertion of an associated tool for further pivoting said locking member wherein said jaw member moves said jaw engaging element to a locked position relative to said locking shaft to lock said door closure means.

4,224,879

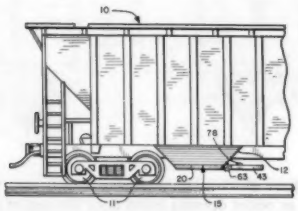
RAILWAY HOPPER CAR DOOR LATCH

Charles L. Van Auken, New Cumberland, Pa., assignor to Keystone Industries, Inc., Rolling Meadows, Ill.

Filed Jun. 12, 1978, Ser. No. 914,433

Int. Cl.[2] **B61D** *7/04, 7/20, 7/26, 49/00*

U.S. Cl. 105—282 P **9 Claims**



1. In an outlet gate assembly for a hopper car, the combination comprising a frame horizontally positioned at the bottom of the hopper, a door plate slidable therein between a closed position and an open discharging position, a pair of racks each having a series of teeth and extending parallel to one another cantilever-fashion from one side of the frame, the racks being spaced to occupy positions adjacent the respective ends of the frame, a pair of main brackets secured to the edge of the door plate adjacent the inner sides of the respective racks, an operating shaft journalled in the brackets and having pinions rigidly secured thereto engaging the teeth in the racks, the operating shaft having a turning-tool connection at its respective ends for rotating the shaft so that the pinions walk along the racks for sliding of the door plate, a latch shaft having means on the door plate for journalling the same and extending parallel to and below the level of the operating shaft, the latch shaft having a pair of operating handles each secured thereto in radial relation and extending outwardly for convenient access from either side of the car, said handles having a reference position, said latch shaft having secured to its respective outer ends in radially extending position a pair of latches having hooked end portions, the latches being spaced to underlie the respective racks so that when the door plate is open the latches are blocked from moving into latching position by the underside of the racks and so that when the door plate is closed the hooked end portions of the latches latchingly engage the ends of both of the racks accompanied by rocking of the latch shaft and the handles thereon to reference position indicating that the door plate is both closed and latched.

7. In an outlet gate assembly for a hopper car, the combination comprising a frame horizontally positioned at the bottom of the hopper, a door plate slidable therein between a closed position and an open discharging position, a pair of stationary racks secured to the frame each having a series of teeth and extending parallel to one another cantilever-fashion from one side of the frame, the racks being spaced to occupy positions generally aligned with the respective ends of the door, a pair of main brackets secured to the edge of the door plate adjacent the inner sides of the respective racks, an operating shaft journalled in the brackets and having pinions rigidly secured thereto engaging the teeth in the racks, the operating shaft having a turning-tool connection at its respective ends for rotating the shaft so that the pinions walk along the racks for sliding of the door plate, a latch shaft having means on the door plate for journalling the same below the level of the racks and extending parallel to and below the level of the operating shaft, the latch shaft having a pair of operating handles secured thereto in radial relation extending angularly upward above the level of the racks and extending axially outwardly to overlie the respective racks in a reference position, said latch shaft having secured to its respective outer ends in generally horizontally extending position a pair of latches in the form of plates having upwardly hooked end portions, and means for biasing the latches upwardly toward latching position, the latches being spaced to underlie the respective racks so that when the door plate is in motion the latches ride on the underside of the racks and so that when the door plate is closed the hooked end portions of the latches latchingly engage the ends of both of the racks accompanied by rocking of the latch shaft and the handles thereon to reference position indicating that the door plate is both closed and latched.

8. In an outlet gate assembly for a hopper car, the combination comprising a frame horizontally positioned at the bottom of the hopper, a door plate assembly including door plate slidable therein between a closed position and an open discharging position, a pair of rack members each having a series of teeth and extending parallel to one another cantilever-fashion from one side of the frame, the door plate assembly including a set of main brackets secured to the edge of the door plate adjacent the inner sides of the respective rack members together with an operating shaft journalled in the brackets and having pinions rigidly secured thereto engaging the teeth in the rack members, the operating shaft having a turning-tool connection for rotating the shaft so that the pinions walk along the rack members for sliding of the door plate, the door plate assembly further including a latch shaft having means on the door plate for journalling the same and extending parallel to and along the operating shaft, the latch shaft having at least one operating handle secured thereto in radial relation extending outwardly for convenient access and having a reference position, said latch shaft having secured to at least one end in

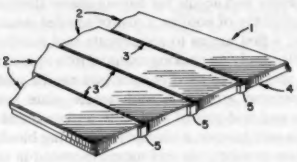
a radially extending position alined with the associated rack member a latch having a hooked end portion so that when the door plate is closed the hooked end portion of the latch engages the end of the associated rack member, accompanied by rocking of the latch shaft and the handle thereon to reference position indicating that the door plate is both closed and latched, the rack member being spaced inwardly from the ends of the frame and substantially within the lateral dimension of the door plate to support the door plate as it is moved between the closed and open positions, the latch shaft being positioned to ride captive under the rack members thereby to hold the entire door plate assembly captive over the range of sliding movement of the door plate.

4,224,880

RAILWAY CAR NAILABLE FLOOR

J. W. Hogue, Bessemer; B. Dean Horner, and Dudley Foster, both of Birmingham, all of Ala., assignors to Pullman Incorporated, Chicago, Ill.

Filed Jun. 9, 1978, Ser. No. 914,114
Int. Cl.[2] B61D *17/10*; E04B *5/10*
U.S. Cl. 105—422 **4 Claims**



1. In a freight vehicle having an underframe, a nailable metal floor structure mounted on said underframe comprising:

a plurality of metal planks disposed in side by side generally parallel relation with one end of each plank in general alignment with a common plane, each plank comprising a generally inverted channel-shaped section having a horizontal web forming the surface of the floor and having flanges depending from the edges of said web so that the adjacent flanges of contiguous planks are complemental to each other thereby providing nailing grooves between each adjacent pair of said planks, and

a generally linear upright end cap rigidly affixed across the ends of said planks generally adjacent to said plane and in flush relation with the underside of said webs of said metal planks thereby enhancing vertical support of said webs,

said end cap including longitudinally spaced, laterally offset portions comformingly fitted to adjacent flanges of contiguous planks.

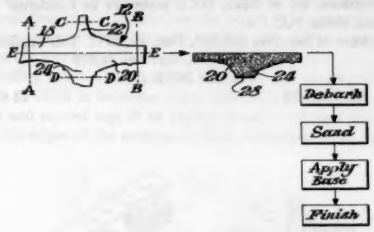
4,224,881

TABLE

James F. Berry, Dover, Del.

Filed Sep. 29, 1978, Ser. No. 946,749
Int. Cl.[3] A47B *13/00*; A01N *3/00*
U.S. Cl. 108—150 **11 Claims**

1. A method of making a table comprising the steps of cutting the trunk of a natural tree at spaced locations transversely with respect to its longitudinal axis to create a trunk portion, cutting the trunk portion longitudinally with respect to its longitudinal axis to divide the trunk portion into trunk segments with at least one trunk segment having a flat horizontal surface resulting from the longitudinal cut and having one limb integral with and extending perpendicularly therefrom at generally the longitudinal central area of the trunk segment, cutting the limb to create a limb portion with a flat surface remote from the flat surface of the trunk segment and parallel thereto, and providing a base on the limb portion with a flat surface parallel to the flat surface of the trunk segment whereby the flat surface of the trunk segment comprises the table top and



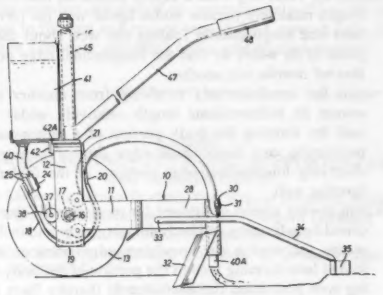
the limb comprises a pedestal support therefor with the parallel flat surface of the base being the support surface thereof.

4,224,882

APPARATUS FOR SOWING SEEDS IN SUSPENSION

John W. Cruse, Robertsbridge, England

Filed Feb. 21, 1978, Ser. No. 879,558
Int. Cl.[3] A01C *7/20*
U.S. Cl. 111—7 **2 Claims**



1. Apparatus for sowing seed comprising a frame, means on said frame for rotatably supporting at least one ground engaging wheel, a tank mounted on the frame to contain seeds in suspension, a drill coulter mounted on the frame.

a peristaltic pump comprising a pipe at least part of which is resilient, pipe compressing rollers on one side of the pipe, and a pipe support bracket secured to the frame on the other side of the pipe;

the inlet of the pipe being connected to the tank outlet;

said pipe compressing rollers being rotatably mounted on said ground engaging wheel on axes parallel to the axis of the ground engaging wheel;

support means for the outlet end of said pipe whereby the open end of the pipe is held above normal ground level;

said means for rotatably supporting the ground wheel comprising an adjustable ring member on the frame, and a bearing member for the wheel eccentrically mounted in said ring member;

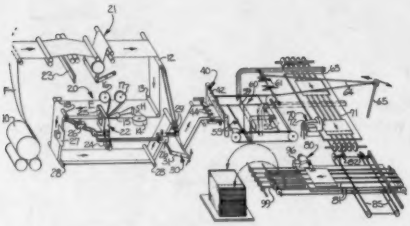
whereby the suspension is metered at a rate proportional to the distance travelled over the ground and the positions of the rollers relative to the pipe effected by adjustment of said ring member, the suspension falling from above ground level into the drill.

4,224,883

APPARATUS FOR MANUFACTURING PILLOWCASES

George E. Zeigler, Jr.; Charles B. Sumpter, Jr., and Carl A. Wortham, all of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Division of Ser. No. 865,731, Dec. 29, 1977. This application Mar. 28, 1979, Ser. No. 24,879
Int. Cl.[2] D05B *13/00*
U.S. Cl. 112—10 12 Claims



1. Apparatus for continusouly manufacturing pillowcases having an attached hem along the mouth of the pillowcase, said apparatus comprising

means for receiving from a supply source an indeterminate length relatively narrow width fabric web for forming a hem and longitudinally folding the web about the midpoint of its width so that the longitudinal edge portions thereof overlie one another,

means for simultaneously receiving from another supply source an indeterminate length relatively wider fabric web for forming the body portion of a pillowcase and positioning one longitudinal edge thereof between the overlying longitudinal edge portions of the folded hem forming web,

a hem sewing station positioned for receiving the thus associated hem-forming and body-forming webs and including means for sewing the overlying edge portions of the folded hem-forming web to the portion of the body-forming web positioned therebetween to thereby form an attached hem along one longitudinal edge of the continuous length body-forming web,

a cutting station positioned for receiving the hemmed body-forming web from the hem sewing station and including cutter means for cutting the web into successive individual pieces of predetermined length,

a folding station positioned for receiving the successive cut pieces from the cutting station and including means for successively folding the cut pieces along a transversely extending fold line located medially of the cut edges to position the cut edges of each successive piece in closely adjacent relation to one another and with the hemmed longitudinal edges in substantial alignment with one another,

a side seaming station positioned for receiving the successive folded pieces from the folding station and including means for sewing along the closely adjacent cut edges of the successive pieces to form a seam therealong, and

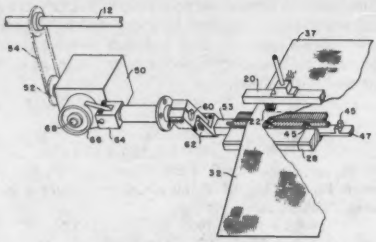
an end seaming station positioned for receiving the successive pieces from the side seaming station and including means for sewing each successive piece along the edge located opposite the hem to form a seam therealong and thereby close the end of the piece to form a pillowcase therefrom.

4,224,884

TUFTING MACHINE

Willard H. Shortte, Jr., La Grange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 30, 1978, Ser. No. 938,027
Int. Cl.[2] D05C *15/00*
U.S. Cl. 112—79 R 2 Claims



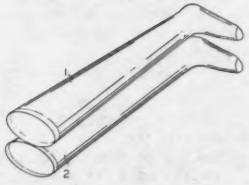
1. Apparatus to produce a tufted pile fabric comprising: a frame, a needle bar mounted on said frame, a needle plate mounted under said needle bar having spaces therein to accommodate a plurality of needles, a row of needles mounted on said needle bar, a first means to reciprocate said needle bar, a pair of feed rolls supplying backing material into operative relationship with said row of needles over said needle plate, an elongated transverse groove in said needle plate between said needle bar and said pair of feed rolls, a plate member slidably mounted in said groove, a plurality of bearing blocks mounted on said plate member, pin roll means mounted in said bearing blocks to engage the backing material supplied to said row of needles and means operably associated with said plate member to slide said plate member laterally back and forth of said row of needles to adjust the position of the backing material relative to said row of needles.

4,224,885

SEAMING APPARATUS FOR GORED PANTY-HOSE

Osho Takatori, Nara, Japan, assignor to Takatori Machinery Works, Ltd., Osaka, Japan

Division of Ser. No. 887,133, Mar. 16, 1978. This application Jan. 29, 1979, Ser. No. 7,648
Claims priority, application Japan, Mar. 25, 1977, 52/33797
Int. Cl.[2] D05B *21/00*
U.S. Cl. 112—121.15 18 Claims



1. An apparatus for seaming panty-hose having gores of a diamond shape, which comprises:

an elongated and substantially endless guide rail means;

a carrier means movably mounted on said guide rail means;

a drive means coacting with said carrier means for moving said carrier means along said guide rail means;

a plurality of template units which are mounted on said carrier means having a predetermined distance between two adjacent template units along a moving direction of said carrier means, each of said template units including a first and a second support member, each of which members is provided with a template assembly comprising a

pair of templates, which templates are overlapped in a direction perpendicular to said moving direction of said carrier means, said first and second support member being capable of being positioned in at least three positions so that said template assemblies can move in a plane, which plane is parallel to the plane in which said carrier means is moved, and are capable of being positioned at a first position where said template assemblies of said first support member and said second support member are substantially parallel, a second position where said template assemblies are aligned in a substantially straight line condition and a third position where said template assemblies are aligned in a reverse V-shape condition;

a cutter means which cuts the overlapping corresponding portions of said pair of stocking materials which are mounted between said template assembly of said first supporting member and said template assembly of said second supporting member along a predetermined line for a predetermined length;

a means for inserting a gore material having a diamond shape and folded in two into a clearance between cut flaps of said stocking materials which are mounted on said template assemblies and the cut edges of which are spread out by moving said template assemblies to said third position after said materials are cut by said cutter means and;

a first sewing machine which seams the upper flap of said gore material and the cut flaps of said upper stocking material, and a second sewing machine which seams the lower flap of said gore and the cut flaps of said lower stocking material, the sewing operation of said first and second sewing machines being effected after said folded gore is inserted between said template assemblies and said template assemblies are positioned at said second position.

18. In an apparatus for seaming panty-hose having gores, the combination comprising

a plurality of template units mounted for movement in an endless path, each said template unit including a first and a second support member, each said member including a template assembly comprising a pair of templates disposed in overlapping relation and means for positioning said support members in a first position where said template assemblies of said first support member and said second support member are substantially parallel, a second position where said template assemblies are aligned in a substantially straight line condition and a third position where said template assemblies are aligned in a reverse V-shape condition;

a cutter means for cutting overlapping corresponding portions of a pair of stocking materials mounted between said template assemblies along a predetermined line for a predetermined length;

a means for inserting a gore material having a diamond shape and folded in two into a clearance between cut flaps of the stocking materials mounted on said template assemblies;

a first sewing machine for seaming a first flap of an inserted gore material and a flap of one stocking material; and

a second sewing machine for seaming a second flap of the inserted gore material and a flap of the other stocking material.

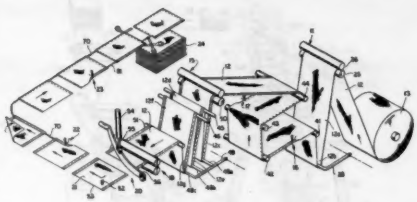
4,224,886

CUTTING AND HEMMING SYSTEM

Perry E. Burton, Atlanta, Ga., assignor to Opelika Manufacturing Corp., Chicago, Ill.

Division of Ser. No. 799,286, May 23, 1977, Pat. No. 4,154,180.
This application Mar. 19, 1979, Ser. No. 21,794
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.15 **4 Claims**

1. Apparatus for forming hemmed sections of cloth and the like comprising first feed means for pulling a length of cloth along its length from a supply, guide means for guiding the length of cloth in a first direction with one surface facing up and subsequently in a second direction with the opposite surface facing up, a first edge treating means positioned along the path of the length of cloth as the cloth moves in the first direction, a second edge treating means positioned along the path of the length of cloth as the cloth moves in the opposite direction, second feed means for moving the length of cloth to a cutting station, cutting means in said cutting station for cutting sections of cloth from the length of cloth, a belt conveyor system including a belt conveyor for receiving and moving the sections of cloth in sequence from said cutting station along the first and second legs of an approximately L-shaped path with the cut edges of the sections of cloth extending along the path



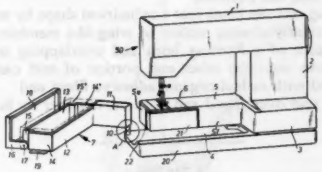
of movement, a third edge treating means positioned along the first leg of the L-shaped path and arranged to treat one cut edge of the sections of cloth, and a fourth edge treating means positioned along the second leg of the L-shaped path and arranged to treat the other cut edge of the sections of cloth, and an elongated convex turning member positioned at the intersection of the first and second legs of the L-shaped path of said belt conveyor system with the longitudinal axis of said turning member oriented at an approximately 45° angle with respect to the first and second legs of the L-shaped path, with said belt conveyor extending about said turning member.

4,224,887

SEWING MACHINE WITH FABRIC-SUPPORTING ARM AND ADD-ON TABLE

Willi Meier, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

Filed Jan. 24, 1979, Ser. No. 6,196
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1978, 7802259[U]
Int. Cl.² A47B *29/00*
U.S. Cl. 112—260 **4 Claims**



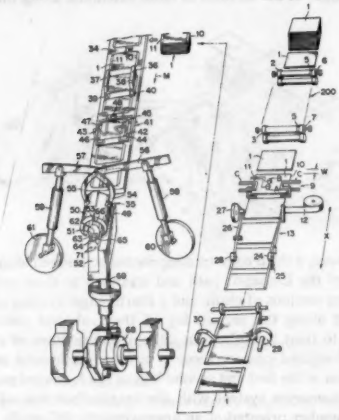
1. In a sewing machine, including a baseplate, a base pedestal mounted on said baseplate and a fabric-supporting arm extending outwardly from said pedestal and overlying at least one side of the baseplate, the improvement comprising, an add-on table of substantially L-shaped configuration having a first part which is alignable with an edge of the arm and a second part extending at substantially right angles to said first part which is alignable with a side of the arm, and pivotable mounting means pivotally supporting said add-on table alongside and spaced from the fabric-supporting arm for pivotal movement about a vertical axis which is substantially in alignment with a rear edge of the supporting arm.

4,224,888

METHOD FOR FORMING CANS

Yuzo Takahashi; Yasuyuki Tanaka; Katsumi Nagai; Nobuo Takahashi; Hiroshi Matsuda; Koichi Ono; Kozi Tanaka, and Shiro Oyama, all of Iwatsuki, Japan, assignors to Hokkai Can Co., Ltd., Tokyo, Japan

Division of Ser. No. 780,840, Mar. 24, 1977, Pat. No. 4,106,420.
This application Jun. 8, 1978, Ser. No. 913,886
Int. Cl.[2] B21D *51/00*
U.S. Cl. 113—120 F 3 Claims



1. A method for forming cans comprising:

press-forming end portions of a can blank from a first stage wherein cut-burrs are completely removed from said end portions to a second stage wherein said end portions are formed to have an inclined surface, at the extremity of which said can blank has a thickness reduced to about one-third of the original thickness thereof;

subjecting said end portions to a high-frequency induction heating;

feeding toward said end portions a tape-like organic adhesive film folded into a U-shape or V-shape by a guide means;

adhering said organic adhesive film under pressure onto said end portions from the upper and lower sides thereof;

melting by means of high-frequency induction heating said organic adhesive film which is adhered under pressure onto said end portions;

rounding said can blank into a cylindrical shape by means of a circularly closing motion of wing-like members under guidance of a forming horn and overlapping one end portions onto the other end portion of said can blank coated with melted organic adhesive films; and

joining said overlapped end portions together by hammering.

4,224,889

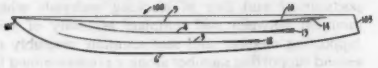
MULTIHULL SAILING CRAFT AND HULL STRUCTURE THEREFOR

Michael S. Spiegel, Miami Beach, Fla., assignor to Separate Reality, Inc., Miami Beach, Fla.

Filed Dec. 7, 1978, Ser. No. 967,451
Int. Cl.[3] B63B *1/20*
U.S. Cl. 114—39 13 Claims

1. In a multihull sailing craft capable of sail-powdered speed through the water greater than displacement hull speed, a plurality of sponsons or amas, each said sponson or ama comprising a sponson or ama hull having:

(a) a generally stepped-V lateral half-cross section, which provides a plurality of generally longitudinal lift-producing hull steps extending generally horizontally outward from the longitudinal center line of said sponson or ama hull and along a major portion of the length of said hull, said hull steps being configured, in their generally horizontal surface area in relation to the hull length, and in their angle of attack, to produce a hydrodynamic righting moment at semi-planing speeds of said sailing craft through the water, with a lift/drag ratio favoring semi-planing speeds and stability at said speeds, said hydrodynamic righting moment being generated generally in direct proportion to the generally horizontal wetted surface area of said hull steps times the square of the semi-planing speed through the water; said hull steps being integral



with said hull and shaped to be generally decreasing in lift-producing and drag-producing width as they approach the stern of said hull, until said width is essentially zero, the generally horizontal planes of said hull steps describing a rotational movement toward the planes passing through the legs of the V-shaped lateral cross-section of said hull as said hull steps approach the stern of said hull until said generally horizontal planes are not visible at said stern; and

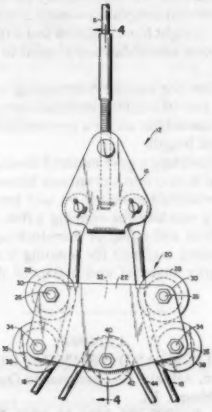
(b) a length-to-beam ratio greater than 10:1, said ratio being selected to minimize hydrodynamic drag at said semi-planing speeds consistent with adequate hull buoyancy for stability at said speeds.

4,224,890

BACKSTAY TENSIONING DEVICE

Curtiss S. Johnson, Jr., Middle Haddam, Conn., assignor to C. Sherman Johnson Co., Inc., East Haddam, Conn.

Filed Aug. 18, 1978, Ser. No. 934,975
Int. Cl.[3] B63H *9/08*
U.S. Cl. 114—109 5 Claims



1. A backstay device for adjusting the tension of a backstay mounted by means of bridle cables to the transom of a sailboat comprising: first and second mounting plates, the first of said plates extending from the outboard side of one of the bridle cables to the outboard side of the other of the bridle cables at a position aft of the bridle cables, the second of said plates extending from the outboard side of one of the bridle cables to the outboard side of the other of the bridle cables at a position

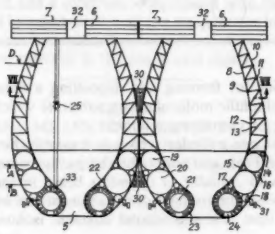
forward of the bridle cables in parallel relationship with the first of said plates; a first pair of sheaves being rotatably mounted between said plates and spaced from each other so as to define a bridle passageway between said sheaves and plates to accept said bridle cables; a second pair of spaced sheaves rotatably mounted between said plates and located respectively on opposite sides of the bridle passageway defined between the first pair of sheaves and mounting plates, the second pair of sheaves being disposed along the passageway remotely from the first pair of sheaves and having a spacing different from the spacing of the first pair to reduce the bending angle of the bridle cables in the passageway; and means for adjusting the position of the plates and sheaves along the bridle cables relative to the transom whereby the spacing between said bridle cables is decreased or increased to adjust the tension of the backstay.

4,224,891

SEMI-SUBMERSIBLE VESSEL HAVING A SEALED CLOSED CHAMBER OF TRUNCATED OVOID SHAPE

Victor Rinaldi, 269, Cours de l'Argonne, 33000 Bordeaux, France

Continuation of Ser. No. 699,089, Jun. 23, 1976, abandoned.
This application Jul. 3, 1978, Ser. No. 921,173
Claims priority, application France, Jun. 27, 1975, 75 20349
Int. Cl.[2] B63B *39/00*
U.S. Cl. 114—256 **34 Claims**



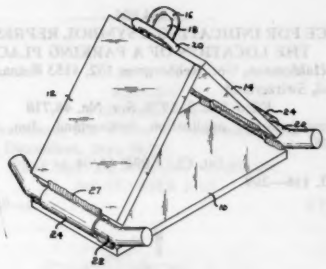
1. A semi-submersible vessel comprising one module formed by a sealed closed chamber, completely submerged in normal use, provided with ballast, means for varying said ballast, a support structure secured to the chamber, said structure being partially immersible in use, and a horizontal deck carried by the upper portion of the support structure wherein at least the lower portion of the vessel formed by the closed chamber has the form of a shell having the ellipsoidal shape of an egg with a pointed end and a less pointed end and being truncated along a plane perpendicular to the longitudinal axis, to retain the less pointed portion thereof and to eliminate the more pointed portion of the shell, wherein the lower portion of the vessel formed by the closed chamber opens at its upper portion toward the support structure and at its lower portion through an opening for communication with the liquid environment, said shell having an external and an internal curved wall such that the majority of their respective surfaces is close to a spherical surface whereby the lines of action of the great majority of the hydrostatic forces acting on said surface traverse a zone which surrounds its geometric center, the volume of said zone being small in comparison to the total volume circumscribed by said surface.

4,224,892

ANCHOR DEVELOPMENT

Gunivar Sandberg, P.L. 1155, 28062 Hanaskog, Sweden

Filed Jul. 25, 1978, Ser. No. 927,924
Claims priority, application Canada, Jun. 7, 1978, 304935
Int. Cl.[3] B63B *21/26*
U.S. Cl. 114—294 **3 Claims**



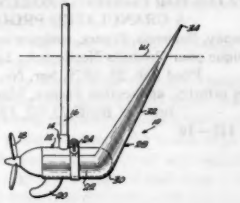
1. A collapsible anchor comprising:
a substantially flat base plate,
a pair of substantially flat side plates of substantially the same width as said base plate, said side plates being pivotally attached at one end thereof to said base plate at opposite ends of said base plate so that said side plates may pivot from a first position wherein their distal ends form an apex of a triangle opposite said base plate to a second position wherein said side plates are substantially parallel to said base plate and each other and one of said side plates is sandwiched between said base plate and the other of said side plates,
means for detachably connecting said side plates as said apex,
means for attaching a flexible anchor connection to said anchor adjacent said detachable connection means, and
bottom engaging means projecting from said anchor.

4,224,893

WEED GUARD FOR ELECTRIC TROLLING MOTORS

Andy F. Vollmar, Box 42, Bokeelia, Fla. 33922

Filed Apr. 19, 1978, Ser. No. 897,701
Int. Cl.[2] B63H *1/14*
U.S. Cl. 440—73 **1 Claim**



1. A weed guard for an electric trolling motor comprising,
a first weed guard portion of semi-cylindrical shape to nest over the bottom portion of a conventional cylindrical housing of an electric trolling motor having a propeller,
a second weed guard portion integral with the first weed guard portion extending angularly forwardly and upwardly from the housing of the trolling motor and being of such a length as to extend somewhat above the normal water line of the trolling motor when in use,
the second portion of the weed guard being in the form of an

elongated semi-cylindrical cone of the approximate diameter of the housing of the electric trolling motor at its base and extending to an apex somewhat above the normal water line of the trolling motor,

the exterior of said second portion being smooth and unperforated to deflect weeds away from the propeller of the electric trolling motor.

4,224,894

DEVICE FOR INDICATING A SYMBOL REPRESENTING THE LOCATION OF A PARKING PLACE

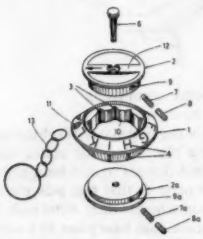
Hugo Haldemann, Unt. Rebbergweg 132, 4153 Reinach, Kanton Basel, Switzerland

Filed Jun. 8, 1979, Ser. No. 46,718

Claims priority, application Switzerland, Jun. 26, 1978, 6945/78

Int. Cl.³ G09F *11/04*

U.S. Cl. 116—209 **7 Claims**



1. A device having a symbol representing the location of a parking place on which a car has been parked, comprising:

a casing in the form of a circular ring having two conically converging outer surfaces provided with symbols,

two identical circular discs being accommodated in said casing in parallel planes and being rotatable in said casing independently of each other in both directions,

recess means being provided on the inner side of the casing, the number of which recess means corresponds to the number of the symbols, said recess means extending radially outwards to coincide with respective symbols, and

locking means, provided in each disc, for locking said disc in one of said recess means during rotation of said disc.

4,224,895

APPARATUS FOR COATING FROZEN PORTIONS WITH A GRANULATED PRODUCT

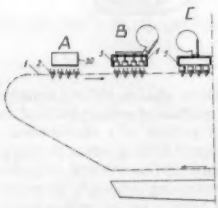
Noël Launay, Beauvais, France, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Feb. 28, 1979, Ser. No. 16,067

Claims priority, application France, Mar. 10, 1978, 78 07068

Int. Cl.² B05C *13/02, 19/00*

U.S. Cl. 118—16 **7 Claims**



1. Apparatus suitable for coating frozen portions of a foodstuff with a granulated product, said apparatus comprising a conveyor, plates carried on said conveyor, said conveyor being operable to advance said plates stepwise and sequentially to a number of stations along a fixed conveyor travel course, means disposed at a first of said stations for depositing granulated product on the plates, means disposed at a second one of said stations for depositing and positioning frozen foodstuff portions on top of the granulated product on the plates, means disposed at a third one of said stations for heating the surfaces of the frozen foodstuff portion to soften same, means disposed at a fourth one of said stations for coating the softened surfaces of the frozen foodstuff portions with granulated product and means disposed at a fifth one of said stations for discharging the coated portion from the conveyor.

4,224,896

DEVICE FOR FORMATION AND DEPOSITION OF MONOMOLECULAR LAYERS OF AMPHIPHILIC MOLECULES ON A SUBSTRATE

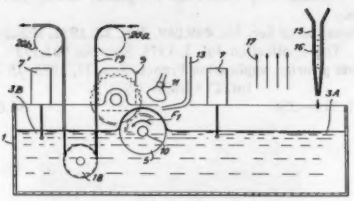
Andre Barraud, Bures-sur-Yvette; Roger Gras, Villiers le Bacee, and Michel Vandevyver, Chatenay Malabry, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Division of Ser. No. 765,063, Feb. 2, 1977, Pat. No. 4,093,757. This application Feb. 2, 1978, Ser. No. 874,533

Claims priority, application France, Feb. 11, 1976, 76 03756

Int. Cl.² B05C *3/12*

U.S. Cl. 118—402 **18 Claims**



1. A device for forming and depositing a monomolecular layer of amphiphilic molecules on a substrate which comprises

(1) a tank for containing a liquid,

(2) at least one cylinder which is rotatably mounted on a horizontal axis and adapted to be partly immersed in said liquid, said cylinder or cylinders being intended to provide a separation which divides the surface of said liquid into at least first and second adjacent isolated compartments,

(3) means for feeding a solution of amphiphilic molecules to the liquid surface of said first compartment, and

(4) means for causing said cylinder or cylinders to rotate about their own axes thereby to transfer a monomolecular layer from the liquid surface of said first compartment to at least the liquid surface of said second compartment.

4,224,897

METHODS OF DEPOSITING MATERIALS ON SUBSTRATES

Ronald A. Dugdale, Didoot, England, assignor to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 540,391, Jan. 13, 1975, abandoned. This application Sep. 18, 1978, Ser. No. 943,349

Claims priority, application United Kingdom, Jan. 24, 1974, 3315/74

Int. Cl.³ C23C *11/00*

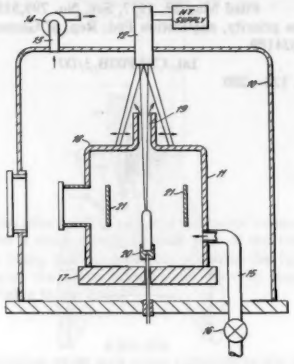
U.S. Cl. 118—719 **5 Claims**

1. A vapor deposition apparatus for evaporating a material in a gaseous environment and depositing the evaporated material on a substrate, the apparatus comprising,

(a) an outer enclosure;

(b) an outer enclosure located within the outer enclosure, the

outer enclosure and the inner enclosure each maintaining a gaseous environment therein;
(c) an inlet for a gas into the inner enclosure;
(d) a gas outlet from the inner enclosure to discharge into the outer enclosure;
(e) a gas outlet from the outer enclosure;
(f) means for supporting a material to be vaporized in the inner enclosure; and
(g) means outside the inner enclosure for generating a beam of charged particles and for selectively directing the beam



through the inner enclosure at the material supporting means so as to vaporize the material supported thereby, and periodically directing the beam at the outside of a wall of the inner enclosure so as to heat said wall to a temperature such that, in use of the apparatus, the gas in the inner enclosure, at least in the region between the material to be vaporized and a substrate to be coated with the material, is heated by said heated wall to a temperature high enough to suppress homogeneous nucleation of particles of the vaporized material in the gas in said region.

4,224,898

METHOD AND MEANS FOR ANESTHETIZING INSECTS

Raymond O. Flagg, and Richard L. Franks, both of Burlington, N.C., assignors to Carolina Biological Supply Company, Burlington, N.C.

Filed May 24, 1979, Ser. No. 42,246
Int. Cl.³ A01K *67/00*
U.S. Cl. 119—1 **9 Claims**

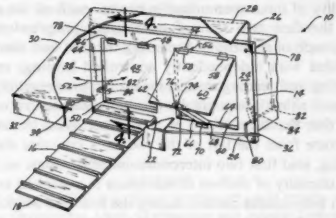
1. A method for anesthetizing insects, such as fruit flies, while the insects are contained in a culture vessel having a mouth closed by a flexible porous plug, said method being characterized by avoiding the necessity of removing the plug or transferring the insects to another vessel, and said method comprising applying a volatile liquid anesthetic to an applicator, inserting the anesthetic-containing applicator between the wall of the culture vessel and the porous plug without removal of the plug and without creating an opening therebetween to allow the insects to escape, and positioning the anesthetic-containing applicator inside the culture vessel and maintaining the applicator in the culture vessel while allowing the anesthetic to vaporize to thereby expose the insects in the culture vessel to the anesthetic.

4,224,899

PET SHELTER

Marilyn Cruchelow, and Wayne L. Cruchelow, both of 1315-39th St., Desmoines, Iowa 50311

Filed Mar. 23, 1978, Ser. No. 889,496
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—19 **3 Claims**



1. A pet shelter adapted to be mounted in an opening of a house wall comprising:
a housing having a front wall, a top wall, a bottom wall, opposite side walls and a rear wall,
said rear wall of said housing being provided with an interior opening,
screen means removably mounted in covering relation over said interior opening for permitting sound, air and light to enter said housing through said opening, while at the same time containing said pet within said housing,
a mounting flange extending outwardly from said housing adjacent said front wall, said flange having a rearwardly presented surface adapted to abut against the exterior of said house wall around the margins of said opening, whereby said front wall will be disposed on the exterior of said house wall, and said rear wall will be disposed on the interior of said house wall;
at least one opening in said front wall, said opening having upper, lower, and opposite side margins;
a door mounted in covering relation over said opening;
hinge means connecting said door to said upper margin of said opening for pivotal movement about a horizontal axis between an inner position wherein the lower edge of said door is located rearwardly of said front wall and an outer position wherein said lower edge of said door is located outwardly of said front wall whereby a pet may enter and exit said housing by pushing said door to said inner and outer positions, respectively;
locking means for selectively, retentively engaging and holding said door in a closed position between said inner and outer positions, said door closing said opening when in said closed position;
said locking means comprising a manually operable handle extending from both said front and rear walls of said housing for causing said locking means to selectively, retentively engage said door and for selectively causing said locking means to release said door for swinging movement.

4,224,900

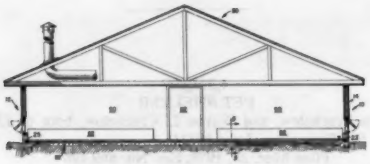
METHOD FOR RAISING BIRDS AND APPARATUS FOR CARRYING OUT SUCH METHOD

Andrew Truhan, P.O. Box 467, Granite Falls, N.C. 28630

Continuation-in-part of Ser. No. 841,482, Oct. 12, 1977, Pat. No. 4,151,811. This application Jan. 19, 1979, Ser. No. 4,872

Int. Cl.[3] A01K *31/18, 31/20*

U.S. Cl. 119—21 4 Claims



1. A structure for raising small animals and particularly the galliformes such as chickens comprising a housing having a plurality of intercommunicable rooms, each of the rooms except the first two thereof comprising progressively larger areas, each of said rooms including the first two thereof being provided with independently controlled heating, ventilating, watering and feeding means, means for progressively moving the small animals sequentially through each such room at a rate such that the animals are at a predetermined maturity upon departure from the last of the rooms, a concrete slab for the housing, said first two intercommunicable rooms each including a plurality of shelves or sub-zones in a stacked array upon which baby chicks mature during the first two weeks of maturation, wherein each of the intercommunicable rooms is adapted to house the birds for a one-week term, and wherein the heating, cooling and filtering means for each room is sized in relation to the size of the room and the maturity of the birds, and wherein the heating means comprises radiant heating means provided in the concrete slab, and comprises hot water piping and includes valve means to maintain the concrete slab at a temperature from about 65° to 85° F., and further wherein the concrete slab is corregated and the corregations range in amplitude from about ¼" to about 1", and the spacing between the corregations is from about ¼" to about 1".

4,224,901

COMBINATION INNER FLEA-TICK COLLAR AND OUTER PROTECTIVE COLLAR, FOR ANIMALS

Sam H. Carey, Jr., P.O. Box 14031, Orlando, Fla. 32807

Filed Apr. 16, 1979, Ser. No. 30,519

Int. Cl.[3] A01K *27/00*

U.S. Cl. 49—106 10 Claims

1. In a combination, an animal collar comprising an outer collar portion of a predetermined overall length and width, including a main central length terminating at a first end in a buckle end portion and at a second end in a buckle engaging portion; means for selectively attaching said buckle and buckle engaging portions relative to each other to define a generally circular configuration of the collar of a preselected size,

an inner collar portion comprised of an insecticide impregnated strip, sized for press fitted engagement within the length of a recess formed longitudinally centrally of an inner side of said main central length,

a first insecticide impregnated tape portion including adhesive means along one face thereof in fixed engagment along said inner side and extending from a first end of said impregnated strip to a distal end of said buckle end portion.

4,224,902

AIR-COMPRESSING INJECTION INTERNAL COMBUSTION ENGINE WITH AUXILIARY CHAMBER

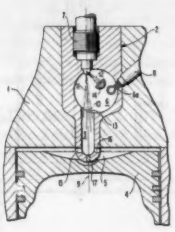
Klaus Binder, Deizisau; Peter Charzinski, Winnenden-Schelmenholz; Hermann Hiereth, Esslingen, and Harald Polz, Plattenhardt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed May 23, 1977, Ser. No. 799,515

Claims priority, application Fed. Rep. of Germany, May 29, 1976, 2624189

Int. Cl.[3] F02B *3/00*

U.S. Cl. 123—280 17 Claims



1. An air-compressing injection internal combustion engine which comprises a main combustion space means arranged in a piston and an auxiliary chamber means in continuous communication with the main combustion space means by way of a channel-shaped constriction means, said auxiliary chamber means including a fuel injection nozzle means and glow plug means, characterized in that the auxiliary chamber means includes a pressure chamber which is disposed eccentrically in relation to the fuel injection nozzle means and the constriction means, the injection nozzle means is operable to inject a first jet of fuel into the constriction means and a second jet of fuel at least approximately into an area of the glow plug means located in the eccentrically offset part of the pressure chamber, and in that independent impact means cooperable with the second jet of fuel are mounted on a wall of the pressure chamber for enhancing a distribution of fuel injected by the fuel injection nozzle means.

4,224,903

FUEL SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Feb. 2, 1979, Ser. No. 8,963

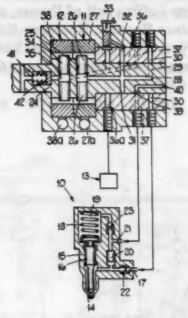
Claims priority, application United Kingdom, Mar. 21, 1978, 11044/78

Int. Cl.[3] F02B *3/00;* F02M *41/00;* F04B *23/04*

U.S. Cl. 123—300 7 Claims

1. A fuel system for a multi-cylinder internal combustion engine comprising a plurality of injection nozzles which in use are mounted on an engine to direct fuel into respective combustion spaces of the engine, each nozzle incorporating a resiliently loaded valve member which controls the flow of fuel through an outlet from a fuel inlet, the valve member being operable by fuel under pressure supplied to the inlet, a fuel pump for supplying fuel to the inlets in turn, pilot pumps incorporated in the nozzles respectively and which when actuated cause a small volume of fuel to be delivered through the respective outlets in advance of the main volume of fuel, pilot inlets on the injection nozzles respectively, said pilot inlets, in use, receiving liquid under pressure in turn to actuate the respective pilot pumps, each nozzle incorporating a non-return

valve disposed to allow fuel which has leaked past the respective valve member to flow to the respective pilot inlet when the liquid pressure at the pilot inlet is sufficiently low, the system including a pressure pump for supplying liquid under



pressure to the pilot inlets in turn and means for connecting the pilot inlets to a drain during at least part of the time when liquid is not being delivered thereto whereby the fuel which has leaked past the valve member can flow by way of said non-return valve to the drain.

4,224,904

CARBURETTOR FOR AIR AND LIQUID FUEL UNDER PRESSURE FOR INTERNAL COMBUSTION ENGINES

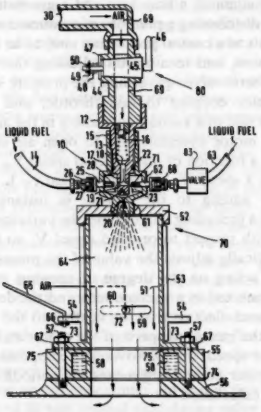
Ernest J. Clerk, 18 South Ave., Rest Pen, Kingston 10, Jamaica

Filed Jun. 13, 1978, Ser. No. 915,249

Claims priority, application United Kingdom, Jun. 27, 1977, 26835/77

Int. Cl.³ F02M *17/00, 9/08, 23/00*

U.S. Cl. 123—445 **4 Claims**



1. A carburettor for air and liquid fuel under pressure for internal-combustion engines, comprising:

an air/liquid fuel mixing chamber;

an air nozzle terminating in said mixing chamber and connectable to a source of air under pressure;

at least one liquid fuel supply duct connectable to a source of pressurized liquid fuel and terminating within said mixing chamber in an opening of sufficiently small dimensions to produce a fine jet of liquid under a pressure higher than that of said air, said opening facing said nozzle;

a cap displaceable relative to the said air nozzle and carrying the said at least one fuel supply duct, said mixing chamber being defined between the said air nozzle and the said cap, the air outlet being so disposed relative to the said opening of the said at least one liquid fuel supply duct as to direct the said fine jet of liquid and the air issuing from said outlet to intersect each other in predetermined displaced positions of the said cap while in predetermined other displaced positions of said cap the said fine jet of liquid hits a solid part of said air nozzle whereby in all of said positions of said cap the said fine jet of liquid is highly disintegrated and mixes with said air in such highly disintegrated condition;

a restricted outlet orifice for the outflow of said mixture from the mixing chamber, said orifice being adapted to further disintegrate said mixture as it issues therefrom;

a vaporizer connected to receive said mixture from the outlet orifice; said vaporizer having an outlet of constant flow cross-section and adapted for connection to an intake manifold of the engine in use, and an openable and closable auxiliary air inlet into said vaporizer;

valve means for control of the total air supply to the vaporizer, said valve means comprising a rotary sleeve valve for the said auxiliary air inlet and a stop cock for the air supply to said mixing chamber, the rotary sleeve valve and the stop cock being actuable independently of each other; and

said auxiliary air inlet is disposed, relative to the direction of flow of said mixture, between the outlet orifice and the vaporizer outlet, but nearer to the latter than to the outlet orifice.

4,224,905

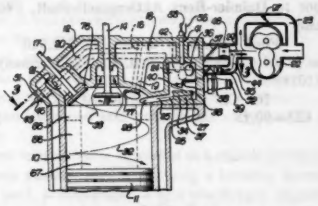
TWO-CYCLE ENGINE WITH STABILIZED COMBUSTION AND METHOD OF OPERATION THEREFOR

Ernest A. von Seggern, 1051 E. Angeleno Ave., Burbank, Calif. 91501; Henry E. von Seggern, deceased, late of Escondido, Calif., and by Blanche von Seggern, executrix, 2310 N. Broadway, Escondido, Calif. 92026

Continuation-in-part of Ser. No. 665,512, Mar. 10, 1976, abandoned, which is a continuation of Ser. No. 381,790, Jul. 23, 1973, abandoned, which is a continuation of Ser. No. 204,633, Dec. 3, 1971, abandoned. This application May 25, 1978, Ser. No. 909,560

Int. Cl.² F02D *35/02;* **F02B** *3/04, 23/10*

U.S. Cl. 123—65 WA **35 Claims**



1. In an internal combustion engine of the two cycle, spark ignition type, having a cylinder and a piston, a combustion chamber opposite said piston, exhaust expulsion means substantially on the axis of said cylinder, and an ignition chamber separate from said combustion chamber but in direct communication through a connecting passage, the combination of:

means for dividing the fuel supplied to said engine into an ignition portion for said ignition chamber and a power portion for said combustion chamber, to effect a first stratification;

means to establish an axial circulation in said cylinder with a fuel-air mixture circulating around axially positioned exhaust gas, in a second stratification;

means to sequentially introduce excess air into said cylinder

to establish an axial circulation therein about said axially positioned exhaust gas and also separated from said fuel-air mixture in a third stratification; and

means to establish an axial circulation in said ignition chamber, with excess air circulating around an axially positioned fuel-air mixture to establish a fourth stratification in said engine.

34. In an internal combustion engine of the spark ignition type having a cylinder and piston and combustion chamber substantially co-axial with said cylinder, exhaust expulsion means opening into said combustion chamber substantially on the axis of said cylinder and fuel-air mixture inlet means opening tangentially into said cylinder and combustion chamber space adjacent the periphery of said cylinder, the method of charging said chamber with a fuel-air mixture and igniting said mixture, which includes as steps:

directing said fuel-air mixture tangentially into said cylinder through said peripheral inlet means to establish a substantial circulation velocity inside said cylinder in a given hand about said cylinder axis while displacing exhaust gas in said cylinder from a previous cycle of operation through said axially positioned exhaust expulsion means;

compressing said fuel-air mixture into said combustion chamber; and

directing an ignition flame with substantial velocity essentially tangentially into said combustion chamber to establish a circulation therein about the length axis of said cylinder in a hand of rotation opposite to that of said circulating fuel-air mixture, to significantly retard the rate of rotation of said fuel-air mixture while igniting said mixture.

4,224,906

COMBUSTION ENGINE WITH INTERNAL COMBUSTION

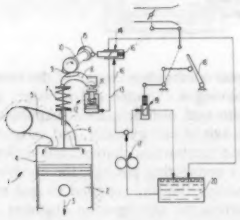
Robert Happel, Waiblingen-Bittenfeld, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 2, 1978, Ser. No. 882,910

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710189

Int. Cl.[3] **F01L** *9/02;* **F02M** *25/06*

U.S. Cl. 123—90.15 **33 Claims**



1. An internal combustion engine, the internal combustion engine including an exhaust gas return means and separate inlet and exhaust means separate as regards the gas paths thereof, characterized in that the exhaust gas return means is essentially independent in the gas paths thereof from the inlet means.

4,224,907

METHOD FOR REGULATION OF THE SPEED OF AN INTERNAL COMBUSTION ENGINE AND LIMITER SYSTEM MAKING USE OF IT

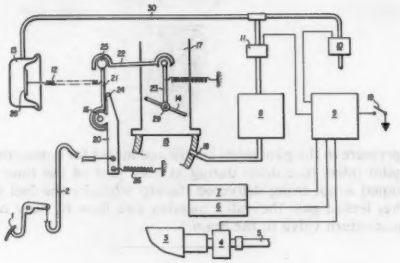
Andre Lefeuvre, Noisy le Roi; Gilles Leconte, Paris, and Michel Chiapello, Maisons-Laffitte, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Nov. 16, 1978, Ser. No. 961,535

Claims priority, application France, Nov. 16, 1977, 77 34396; May 16, 1978, 78 14369

Int. Cl.[3] **B60K** *31/00*

U.S. Cl. 123—352 **9 Claims**



1. In a speed limiter system for use in the regulation of the speed of an internal combustion engine having a manual acceleration pedal coupled to a throttle and an air intake manifold coupled to motor cylinders, said system utilizing a computer in association with a servo system, a speed sensor and a shaping circuit for shaping signals produced by the speed sensor, said computer containing a time base and a generator circuit producing and distributing a plurality of command and synchronization signals to a central processing unit, to an ordered speed selector circuit, and to a circuit adjusting the opening of at least two electrovalves governing the pressure within a pneumatic actuator coupled to said throttle, said electrovalves respectively tied to a vacuum prevailing in the air intake manifold of the motor cylinders and to open air at atmospheric pressure, as a function of said ordered speed V_o, a speed V_2 at an instant t, a speed V_1 at a prior instant $t-1$, the computer periodically adding to the change in instantaneous speed (V_2-V_1) in a preceding unit of time, the variation (V_2-V_o) of speed V_2 with respect to ordered speed V_o so that the computer periodically adjusts the value of the pressure within the actuator in acting on the degree of opening of a first electrovalve connected to a vacuum tank and the degree of opening of a second electrovalve for venting to the open air as a function of the measured speed of the motor and of the variation in motor speed, the improvement comprising:

said computer comprising means for periodically performing the calculation

$$a[b(V_2-V_1)+(V_2-V_o)]+c$$

where a and b are predetermined coefficients and c is either a fixed value or zero depending on whether or not the instantaneous speed variation (V_2-V_1) has remained greater than zero during two successive time periods; and

means for adjusting the value of the pressure within said actuator by controlling the openings of the said first electrovalve connected to a vacuum tank and the said second electrovalve for venting to the open air according to a parabolic law and as a function of the result of the periodically performed calculations.

4,224,908

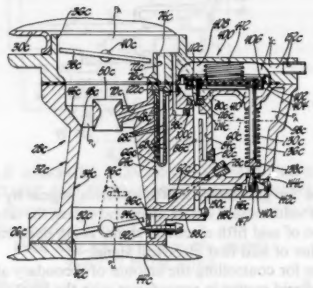
APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Kenneth C. Bier, Bloomfield Hills, and Robert J. Miller, Warren, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Division of Ser. No. 684,547, May 10, 1976, Pat. No. 4,135,482. This application Jul. 13, 1978, Ser. No. 924,158

Int. Cl.[3] F02M 7/00

U.S. Cl. 123—438 30 Claims



1. A carburetor for a combustion engine, comprising carburetor body means, induction passage means formed in said body means, variably positionable throttle valve means for controlling the rate of motive fluid through said induction passage means and into said engine, fuel reservoir chamber means formed in said body means, idle fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage means for supplying all the rates of metered idle fuel flow throughout the entire range of required rates of metered idle fuel flow, main fuel metering system means communicating generally between said fuel reservoir chamber means and said induction passage means for supplying all the rates of metered main fuel flow throughout the entire range of required rates of metered main fuel flow, said idle fuel metering system means comprising first modulating valve means carried by said body means and effective to be variably positionable throughout the entire said range of required rates of metered idle fuel flow in order to thereby controllably alter the rate of metered idle fuel flow through said idle fuel metering system means to said induction passage means throughout the entire said range of required rates of metered idle fuel flow, said main fuel metering system means comprising second modulating valve means carried by said body means and effective to be variably positionable throughout the entire said range of required rates of metered main fuel flow in order to thereby controllably alter the rate of metered main fuel flow through said main fuel metering system means to said induction passage means throughout the entire said range of required rates of metered main fuel flow, common fluid pressure responsive motor means carried by said body means and operatively connected to said first modulating valve means and to said second modulating valve means, said common fluid pressure responsive motor means being continuously effective throughout said entire range of required rates of metered idle fuel flow and throughout the said entire range of required rates of metered main fuel flow valve means and said second modulating valve means in response to the magnitude of an actuating fluid pressure applied to said common fluid pressure responsive motor means for supplying said all the rates of said metered idle fuel flow and for supplying said all the rates of said metered main fuel flow, and additional chamber means carried by said body means, said additional chamber means being effective for receiving actuating fluid pressure and in turn causing actuating fluid pressure to be applied to said common fluid pressure responsive motor means, said common fluid pressure responsive motor being subjected to engine developed pressure.

4,224,909

EXHAUST GAS RECIRCULATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

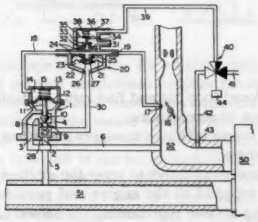
Noboru Toyama, and Tatsuya Taifu, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 29, 1979, Ser. No. 7,601

Claims priority, application Japan, May 31, 1978, 53/75079[U]

Int. Cl.[2] F02M 25/06

U.S. Cl. 123—568 4 Claims



1. An exhaust gas recirculation system for an internal combustion engine having an intake passage, a throttle valve provided in said intake passage, and an exhaust passage, comprising:

an exhaust gas recirculation passage for conducting exhaust gases from said exhaust passage to said intake passage;

an exhaust gas recirculation control valve provided at a middle portion of said exhaust gas recirculation passage and having a diaphragm chamber and adapted to increase its opening as vacuum supplied to said diaphragm chamber increases;

a vacuum passage which supplies vacuum to said diaphragm chamber;

an orifice means provided at a middle portion of said exhaust gas recirculation passage on the upstream side of said exhaust gas recirculation control valve as seen in the direction of exhaust gas recirculation through said exhaust gas recirculation passage and defining a pressure chamber between itself and said exhaust gas recirculation control valve;

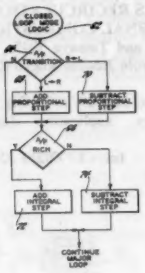
a vacuum control valve provided at a middle portion of said vacuum passage and comprising a housing having a release port, a diaphragm, a first diaphragm chamber provided on one side of said diaphragm and supplied with pressure of the exhaust gases existing in said pressure chamber, a second diaphragm chamber provided on the other side of said diaphragm and opened to the atmosphere through said release port, a valve port which opens said vacuum passage to said second diaphragm chamber, and a valve element supported by said diaphragm and adapted to close said valve port when the pressure in said first diaphragm chamber is higher than that in said second diaphragm chamber by more than a predetermined amount, and to open said valve port in other pressure conditions;

and a thermostatic control means which varies the opening area of said release port in accordance with the temperature of the engine.

4,224,910
CLOSED LOOP FUEL CONTROL SYSTEM WITH AIR/FUEL SENSOR VOTING LOGIC

Daniel J. O'Brien, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1979, Ser. No. 28,694
Int. Cl.[3] F02B 3/00; F02M 7/00
U.S. Cl. 123—440 4 Claims



1. A closed loop air and fuel ratio controller for an engine comprising, in combination:

supply means effective to supply a mixture of air and fuel to the engine;

sensor means effective to sense the air/fuel ratio of the mixture supplied to the engine and provide a sensor signal having a value representing the sensed air/fuel ratio;

an air/fuel ratio condition sensing means effective during each of successive sampling periods to provide an output representing the sense of deviation of the air/fuel ratio from a predetermined ratio, said air/fuel ratio condition sensing means including

a memory element having two stable states,

means effective during each sampling period to sample the value of the sensor signal N times, and

means responsive to the N sampled sensor signals during each sampling period effective to (1) set the memory element to one of its stable states representing an air/fuel ratio greater than the predetermined ratio when more than N/2 samples of the sensor signal values represent an air/fuel ratio greater than the predetermined ratio and (2) set the memory element to the other one of its stable states representing an air/fuel ratio less than the predetermined ratio when less than N/2 samples of the sensor signal values represent an air/fuel ratio less than the predetermined ratio; and

means responsive to the state of the memory element effective to adjust the air/fuel ratio of the mixture supplied by the supply means in amount and direction tending to produce the predetermined ratio.

4,224,911
APPARATUS FOR CONTROLLING THE AMOUNT OF SECONDARY AIR FED INTO AN INTERNAL COMBUSTION ENGINE

Tadao Mitsuda; Minoru Iwata, both of Susono, and Masatoshi Sugiura, Obu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 10, 1979, Ser. No. 37,751
Claims priority, application Japan, May 18, 1978, 53/058319
Int. Cl.[3] F02B 3/00
U.S. Cl. 123—589 16 Claims

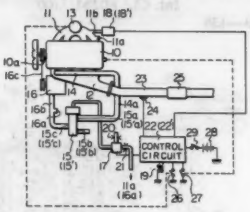
1. An apparatus for controlling the amount of secondary air fed into an internal combustion engine, comprising:

means for generating a first electrical signal having a value which indicates an equivalent air-fuel ratio condition of said engine;

means for generating a second electrical signal having a value which indicates the rotational speed of said engine;

means for generating a third electrical signal having a value which indicates the load of said engine;

means for generating a fourth electrical signal having a value corresponding to the product of the value of said second electrical signal and the value of said third electrical signal;



means for generating a fifth electrical signal by integrating the value of said fourth electrical signal, the integral direction of said fifth electrical signal being determined by the value of said first electrical signal;

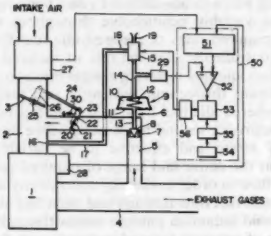
means for controlling the amount of secondary air to be fed into said engine in accordance with the level of an actuating pressure applied thereto, and;

means for controlling the level of the actuating pressure applied to said secondary air amount control means, in accordance with the value of said fifth electrical signal.

4,224,912
EXHAUST GAS RECIRCULATION SYSTEM WITH AN AUXILIARY VALVE

Masaaki Tanaka, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 16, 1979, Ser. No. 39,610
Claims priority, application Japan, Aug. 2, 1978, 53-94240
Int. Cl.[3] F02M 25/06
U.S. Cl. 123—568 5 Claims



1. An exhaust gas recirculation control system for an engine which has an intake passage which incorporates a throttle valve, and an exhaust passage, comprising:

an exhaust gas recirculation passage which joins between said exhaust passage and said intake passage;

means to detect engine operating parameters;

an exhaust gas recirculation flow control valve, provided at a middle portion of said exhaust gas recirculating passage, so as to control the cross-sectional area of said exhaust gas recirculation passage according to a control signal;

a computing controller comprising a memory means which is adapted to store target values of a control parameter corresponding to opening amounts of said exhaust gas recirculation flow control valve which provide the most desirable amounts of exhaust gas recirculation under vari-

ous engine operating conditions determined by combinations of said engine operating parameters, wherein said computing contoller computes the target value of said control parameter based upon said engine operating parameters and compares said target value with the actual value of said control parameter and based thereupon produces said control signal; and

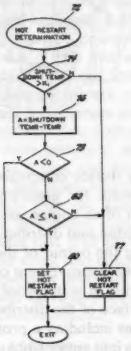
an auxiliary valve located in said exhaust gas recirculation passage which is linked with said throttle valve and controls the cross-sectional area of said exhaust gas recirculation passage in relation to the opening amount of said throttle valve.

4,224,913

VEHICLE AIR-FUEL CONTROLLER HAVING HOT RESTART AIR/FUEL RATIO ADJUSTMENT

Michael L. Barnard, East Jordan, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1979, Ser. No. 66,018
Int. Cl.³ F02N *17/08*
U.S. Cl. 123—440 **3 Claims**



1. An air/fuel control system for an internal combustion engine having supply means to supply a mixture of air and fuel to the engine, including, in combination:

means effective to sense engine temperature;

means responsive to engine shutdown effective to retain in memory the then sensed engine temperature; and

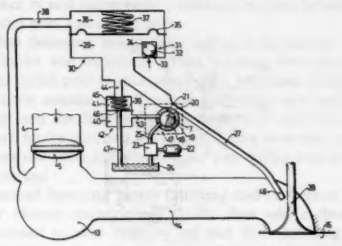
means responsive to engine startup to adjust the supply means to supply air and fuel (1) at a ratio for cold engine operation determined in accord with predetermined engine operating parameters when the engine shutdown temperature retained in memory is less than a first value, (2) at said ratio determined in accord with predetermined engine operating parameters when the difference between the engine shutdown temperature retained in memory and the engine startup temperature is greater than a second value and (3) at a ratio offset from said ratio determined in accord with the predetermined engine operating parameters in the mixture leaning direction when the difference between the engine shutdown temperature retained in memory and the engine startup temperature is less than the second value representing a hot restart condition to thereby provide improved hot restart performance of the internal combustion engine.

4,224,914

FUEL INJECTION APPARATUS

Heinrich Knapp, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,679
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1977, 2742797
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—452 **10 Claims**



1. In a fuel injection apparatus for mixture-compressing, externally ignited internal combustion engines having air induction tube means into which continuous injection is maintained, the air induction tube means being connected to each engine cylinder; the apparatus including: an arbitrarily actuatable throttle valve mounted in the air induction tube means; a fuel apportionment valve having a movable part partly defining a fuel apportionment point; a fuel line connected to the fuel apportionment valve through which fuel is delivered to the fuel apportionment valve for apportionment past the fuel apportionment point; and a metering device mounted to extend into the air induction tube means upstream of the throttle valve and to move in response to the air quantity flowing through the air induction tube means, the metering device being connected to the fuel apportionment valve to control the fuel apportionment valve in accordance with the air quantity flowing through the air induction tube means, so that the fuel apportionment at the fuel apportionment point is a function of the air quantity flowing through the air induction tube means, the improvement comprising:

a source of pressurized air;

at least one fuel feed line connected at one end to the source of pressurized air, situated at its other end in the air induction tube means adjacent the inlet valve of one of the engine cylinders, and connected between its ends to the fuel apportionment point from which metered fuel is received for transport to said other end of the fuel feed line; and

a differential pressure valve connected to the fuel apportionment valve for maintaining the pressure differential at the fuel apportionment point constant, said differential pressure valve having a movable valve part with opposed sides, one of said opposed sides being exposed to the fuel pressure upstream of the fuel apportionment point and the other of said opposed sides being exposed to the air pressure in the fuel feed lines.

4,224,915

FUEL INJECTION APPARATUS

Klaus-Dieter Emmenthal; Otto Schäfer, both of Wolfsburg, and Rudolf-Helmut Strozyk, Helmstedt, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

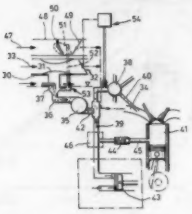
Filed Sep. 14, 1978, Ser. No. 942,416
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817049
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—533 **22 Claims**

1. Apparatus for injecting fuel into the intake pipes of an

internal combustion engine, said engine having an intake line for conducting air to said intake pipes with an arbitrarily adjustable throttle flap arranged therein, said fuel injection apparatus comprising, in combination:

(a) an air channel branching off from said intake line at a point ahead of said throttle flap, as viewed in the direction of air flow through said intake line, and having at its opposite end a narrowed cross section;

(b) fuel metering means for supplying fuel to said air channel in dependence upon engine load;



(c) a fuel distributor and means, connected to said distributor, for supplying a fuel-air mixture to the individual intake pipes of the engine;

(d) a fuel delivery pump connected between said narrowed cross section of said air channel and said distributor for supplying fuel and air to said distributor; and

(e) means for supplying auxiliary air at the outlet of said fuel pump for forming a fuel-air mixture to be supplied to said distributor, said auxiliary air supplying means including an air pressure generator and a bypass line connecting said air pressure generator to said fuel pump outlet in the immediate vicinity of said fuel pump.

4,224,916

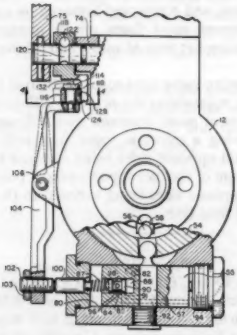
TIMING CONTROL FOR FUEL INJECTION PUMP

Charles W. Davis, Simsbury, Conn., assignor to Stanadyne, Inc., Windsor, Conn.

Filed Nov. 13, 1978, Ser. No. 959,908

Int. Cl.[3] F02M *39/00*

U.S. Cl. 123—502 **5 Claims**



1. A fuel injection pump having pumping plungers and timing means to vary the timing of the pumping strokes, a timing control piston in a closed cylinder connected with the timing means to actuate the same, a passageway communicating with the closed cylinder, a servo valve intersecting the passageway, a servo valve biasing spring, and a source of fluid under a pressure correlated with engine speed acting on the servo valve against the bias of the servo valve biasing spring, characterized by a movable spring seat for the servo valve biasing spring, a movable throttle for mechanically controlling the quantity of fuel delivered by a single pumping stroke, and a pivoted lever having one end engaging said spring seat and its other end engaaging a cam fixed to the throttle to change the biasing force of the servo valve biasing spring with movement of the throttle.

4,224,917

IGNITION DEVICE

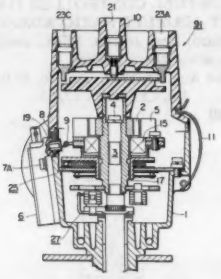
Terumi Nakazawa; Hitoshi Minorikawa; Kazutoshi Kobayashi; Hiromitsu Nagae, and Tomoji Inui, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 31, 1978, Ser. No. 873,772

Claims priority, application Japan, Feb. 2, 1977, 52-9699

Int. Cl.[2] F02P *7/00*

U.S. Cl. 123—647 **5 Claims**



5. In an ignition device comprising a distributor housing, signal generator means for generating a signal synchronous with the revolution of an engine, said signal generator means being positioned within said distributor housing, and amplifier means for detecting the output of the signal generator means and amplifying it, the improvement comprising, said amplifier means being provided in waterproof housing means attached to an outer side surface of the distributor housing, said waterproof housing means including a protuberance integral therewith which projects into an aperture of the distributor housing and which surrounds pickup terminals provided for connecting said signal generator means and said amplifier means whereby there results a highly waterproofed arrangement.

4,224,918

CYLINDER HEAD CONSTRUCTION

Kazuyuki Tanaka; Kazuo Kobayashi; Itsuro Okabe, all of Hiroshima, and Toshimitsu Tanaka, Yamaguchi, all of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Continuation of Ser. No. 789,277, Apr. 20, 1977, abandoned. This application Jan. 19, 1979, Ser. No. 5,012

Claims priority, application Japan, Apr. 24, 1976, 51-51612; May 6, 1976, 51-57112; May 6, 1976, 51-57113; May 14, 1976, 51-55920; May 14, 1976, 51-62107

Int. Cl.[3] F02B *23/08;* F02F *1/42*

U.S. Cl. 123—657 **4 Claims**

1. A cylinder head construction comprising:

a mating surface for connection to a cylinder block;

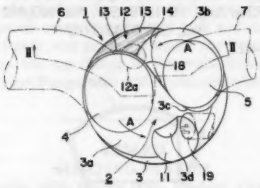
an inner surface having a large-radius of curvature wall portion and a small-radius of curvature wall portion and defining a multi-hemispheric combustion chamber, said large-radius of curvature wall portion having an intake port through which an air-fuel mixture enters said combustion chamber, and said small-radius of curvature wall

portion having an exhaust port through which gases produced by combustion of said mixture leave said combustion chamber;

ignition means in said cylinder head for igniting said mixture in said combustion chamber;

an intake valve in said intake port actuable to selectively open and close said intake port and an exhaust valve in said exhaust port actuable to selectively open and close said exhaust port, said intake port and exhaust port having therein valve seats on which said intake valve and exhaust valve are seated; and

guide wall means extending from said inner surface of said cylinder head towards said mating surface and having a first wall surface which faces said intake port and is generally cylindrical around the central axis of said intake port, a second wall surface which faces said exhaust port and curving outwardly from said exhaust port and which is



generally smoothly connected with said small-radius of curvature wall portion of said inner surface and extending toward said mating surface in a downward slope to form a junction with a portion of said first wall surface, and a third wall surface which is at the level of said mating surface, said junction being a smooth continuation of the line of junction of said large-radius and small-radius of curvature wall portions, said first wall surface being radially spaced from the outer periphery of said intake valve a distance of from 1 to 4 mm, and having a height in a direction parallel to a line along which said intake valve moves which is greater than the maximum lift of said intake valve, and the downward slope of said junction defining a width of said first wall surface in a direction normal to said line and along said outer periphery of said intake valve which gradually decreases in the direction of movement of said intake valve as it opens said intake port.

4,224,919

INTERNAL-COMBUSTION ENGINE ARRANGEMENT WITH IMPROVED CARBURETOR MOUNTING

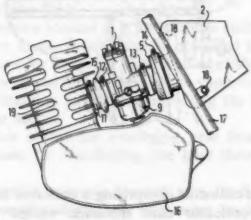
Hermann Appelbaum, Bergrheinfeld, Fed. Rep. of Germany, assignor to Fochtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 2, 1978, Ser. No. 957,140

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1977, 2751348

Int. Cl.³ F02F 7/00; F16F 15/02

U.S. Cl. 123—195 A **7 Claims**



1. An internal-combustion arrangement comprising:

(a) a support;

(b) a cylinder mounted on said support and having an extended intake port for fuel mixture;

(c) an air cleaner casing mounted on said support;

(d) a carburetor having an air-inlet port and an extended fuel-mixture outlet port, said carburetor including a float chamber, said fuel-mixture outlet port being closely spaced from and in general alignment with said intake port so that a narrow annular gap having a length less than either of said outlet port or intake port exists between said outlet port and intake port;

(e) first fastening means fastening said carburetor to said cylinder and including a thin, resilient hose connecting said outlet port to said intake port, said hose bridging the narrow annular gap between said outlet port and intake port and the dimensional relationship of said hose, outlet port, intake port and annular gap being such that said hose does not enter into the annular gap during engine operation; and

(f) second fastening means fastening said carburetor to said air cleaner casing more rigidly than said carburetor is fastened to said cylinder by said first fastening means whereby said carburetor is mounted on said cylinder and air cleaner casing so that it does not oscillate at an amplitude sufficient to cause frothing of liquid fuel in said flow chamber.

4,224,920

SPLIT ENGINE OPERATION WITH MEANS FOR DISCRIMINATING FALSE INDICATION OF ENGINE LOAD REDUCTION

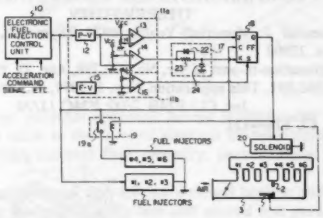
Fukashi Sugasawa, Yokohama; Haruhiko Iizuka; Junichiro Matsumoto, both of Yokosuka, and Yukihiro Etoh, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 2, 1979, Ser. No. 8,738

Claims priority, application Japan, Feb. 10, 1978, 53-16333

Int. Cl.³ F02D 17/00

U.S. Cl. 123—198 F **6 Claims**



1. A split engine control system for an internal combustion engine having at least a first cylinder and a second cylinder, comprising:

means for generating high- or low-power representative signals in response, respectively, to an acceleration command becoming greater or smaller than a predetermined value;

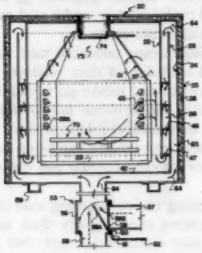
a time constant electrical circuit responsive to said low-power representative signal for generating an output signal varying as a function of time; and

a bistable device having a first input terminal responsive to said high-power representative signal for generating a cylinder activating signal to activate said at least first and second cylinders and a second input terminal responsive to said output signal from said time constant electrical circuit reaching a preset value for generating a cylinder deactivating signal to deactivate at least said second cylinder while allowing said at least first cylinder to remain activated.

4,224,921
FIREPLACE WITH AIR CONTROL DAMPERS

Bernard Petrescue, Pilot Butte, Canada, assignor to Berwin Development Ltd., Kelowna, Canada

Filed Jan. 9, 1979, Ser. No. 2,222
Claims priority, application Canada, Sep. 22, 1978, 311686
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 14 Claims

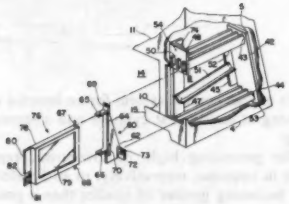


1. A fireplace assembly comprising in combination an outer shell and a firebox component therein, a flue exit communicating with said component and air intake means for said assembly, means between said outer shell and said firebox component selectively to convey air from said air intake means to said component, means to control air to said firebox component, means to convey said air from said air intake means to the exterior of said outer shell, means between said outer shell and said firebox component to convey heat from said firebox component to said air in order to preheat said air when said fireplace is operating and damper means to control the flow of combustion gases through said flue exit, said damper means also closing off said flue exit when in the closed position.

4,224,922
ROOM AIR RECIRCULATING HEATER WITH UTILITY COMPARTMENTS AND DOORS STORABLE THEREWITHIN

Alexander J. Moncrieff-Yeates, 8924 Rhyme Ct., Annandale, Va. 22003

Continuation-in-part of Ser. No. 570,798, Apr. 23, 1975, Pat. No. 4,056,091. This application Nov. 1, 1977, Ser. No. 847,586
Int. Cl.³ F24B 7/00; F24C 15/36
U.S. Cl. 126—121 15 Claims

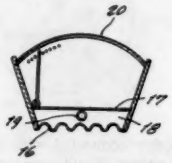


1. In a heating unit of the type including a front face, a fire enclosure accessed through said front face and defined in part by inner side walls and wherein outer side walls are spaced outwardly from said inner walls, the space between said side walls defining a passageway which constitutes a portion of a room air recirculating path, the improvement wherein said front face includes an opening therein communicating with said passageway, whereby items may be stored within said passageway and wherein the improvement further includes at least one door positionable in a closed disposition in front of the access opening to said fire enclosure, carrier means pivotally supporting said door for swinging motion between said closed position to an extended position coplanar with the passageway defined by said spaced side walls and aligned with said opening, and means mounting said carrier for rectilinear movement within said passageway between a forward position supporting said door in said closed or extended positions and a retracted position in which said door is stored within said passageway, said door includes a lip extending outwardly from the free unhinged end of said door in substantially aligned relationship with said door, said lip having at least a portion thereof formed in a serpentine pattern to provide at least one open loop and at least one closed loop, the closed loop being usable as a handle for said door.

4,224,923
SOLAR ROOF DRAIN

Carl E. Wells, 213 Palmer Dr., Fayetteville, N.Y.

Filed Aug. 14, 1978, Ser. No. 933,492
Int. Cl.³ F24J 3/02
U.S. Cl. 126—417 2 Claims

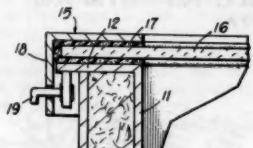


1. A solar roof drain, comprising in combination, an elongated box having upwardly diverging opposite side and end walls, and a bottom wall of blackened corrugated sheet metal serving as a heat collector said bottom wall being aligned with the lower edges of said side and end walls so that said bottom wall contacts a roof surface upon which said box is placed, wherein a heat retainer is spaced above said heat collector and is comprised of a transparent sheet material, a top edge of said box is closed by a transparent rounded cover, an electric heating coil is contained within a space between said heat collector and said heat retainer, and means for connecting said heating coil to a household electric power source, an adjustable reflector inside said box pivoted on hinges and secured in selected angular position by detents on opposite end edges thereof engaging selected openings in said box end walls.

4,224,924
SOLAR COLLECTOR FOR FLUID HEATING SYSTEM

David C. Wilson, 617 Allen Dr., Riverdale, Ga. 30274

Filed Feb. 17, 1978, Ser. No. 878,565
Int. Cl.³ F24J 3/02
U.S. Cl. 126—419 1 Claim



1. A solar collector comprising a collector housing, a pair of serpentine collector coils mounted within the housing in spaced planes and in opposing fluid flow relationship in said planes, said coils being offset laterally each with respect to the

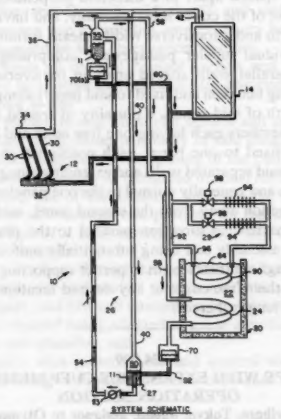
other to such extent that corresponding individual loops of the two coils overlap laterally, inlet and outlet fluid fittings for the ends of the coils in the collector housing, and a fluid temperature responsive flow regulating valve connected in each coil within the housing and having a temperature sensing element in contact with a loop of each coil so that said valves control independently the circulation of fluid through the two serpentine coils between upper and lower predetermined temperature limits for which the valves are calibrated to open and close said valves connected in said serpentine coils near and slightly upstream from said outlet fluid fittings, a fluid storage tank, and fluid conduits connecting said tank with the outlet fluid fitting of each of said collector coils, said collector housing comprising a shallow rectangular open top housing having insulated side and bottom walls and a continuous top outwardly extending marginal flange, a releasable closure for the open top of the housing comprising a glass panel having a marginal edge U-cross section elastic seal, an angle frame having a top flange resting on said seal and a depending side flange projecting below the marginal flange of said housing, and plural spaced manually operated lock and release devices on said side flange and engaging under the housing marginal flange to urge the top flange of the angle frame toward the housing marginal flange with said elastic seal clamped therebetween.

4,224,925

HEATING SYSTEM

Nyle O. Movick, 4600 Macky Way, Boulder, Colo. 80302

Filed Aug. 24, 1978, Ser. No. 936,340
Int. Cl.[2] F24D *11/00*
U.S. Cl. 126—427 13 Claims



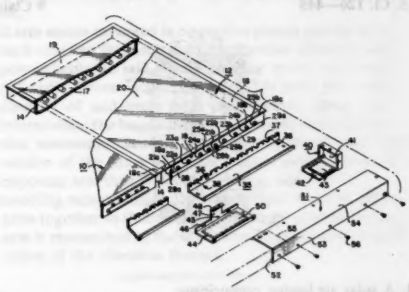
1. Apparatus for heating a building or the like comprising:
a working fluid;
collector means adapted to contain the working fluid and to transfer heat to the working fluid for boiling and vaporizing the working fluid;
heat storage means located at a level of the building below the collector means for storing the collected heat;
a heat exchanger for receiving vaporized working fluid from the collector means for condensing the vaporized working fluid for extracting heat and transferring the heat to the heat storage means;
heat distributor means for extracting heat from the heat storage means for distributing the heat throughout the building;
a lower collecting resevoir located at a level below the collector means and the heat exchanger having a sealed chamber coupled to the collector means and to the heat exchanger for receiving vaporized working fluid from the collector means and condensed working fluid from the heat exchanger whereby pressure may be built up in the sealed chamber for moving the vaporized and condensed working fluid to a higher level;
a liquid separator coupled to the heat exchanger for preventing vaporized working fluid from discharging from the heat exchanger into the lower collecting reservoir until the working fluid condenses;
an upper distributor reservoir located at a level above the collector means having a sealed chamber coupled to the lower collecting reservoir for receiving vaporized and condensed working fluid from the lower collecting reservoir and coupled to the heat exchanger at its upper end for distributing the vaporized working fluid to the heat exchanger and coupled to the collector means at its lower end for distributing the condensed working fluid to the collector means; and
liquid separator means located between the upper distributor reservoir and collector means for preventing vaporized working fluid from discharging from the upper distributor reservoir into the collector means.

4,224,926

IN-LINE MANIFOLD SOLAR HEAT COLLECTORS

Donald R. Bowden, Huntsville, Ala., assignor to Solar Unlimited, Inc., Huntsville, Ala.

Filed Sep. 15, 1978, Ser. No. 942,843
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—448 4 Claims



1. Solar heat collector apparatus having multiple solar collector panels made in the form of identical modular units for connection with external fluid circuitry, each modular unit comprising:
(a) a closed collector box having a closed bottom and upstanding sides and having first and second end portions, the first end portion having both entrance holes and exit holes extending therethrough and communicating between the outside and the inside of the box and the second end portion being fully closed;
(b) multiple collector tubes in the box, each tube having an entrance end entering the box through an entrance hole and an exit end leaving the box through an exit hole in the same end portion, the entrance holes being located on the opposite side of the center of the first end portion from the exit holes and the holes all being mutually aligned parallel to the plane of the bottom of the box;
(c) separate inlet and outlet manifold pipes having their bores mutually aligned along a common axis and disposed parallel to the bottom of the box and extending across the first end portion at the level of said holes, their bores being sealed and out of mutual communication and the pipes being spaced apart where they approach the center of the first end panel, and the entrance ends and exit ends of the collector tubes being respectively connected into the separate inlet and outlet manifold pipes;

(d) the inlet and outlet manifold pipes each having one end for attachment to said external fluid circuitry, and said open ends extending along said axis and facing in opposite directions and terminating short of the sides of the box;

(e) a cover attached to the first end portion of the collector box and enclosing said manifold pipes, the cover comprising multiple separable cover members including a bottom cover member underlying the manifold pipes in the plane of the bottom of the collector box and having a flange attached to said first end portion of the box, and including a top cover member overlying the manifold pipes and lying parallel to the bottom cover member and having a panel member joining said bottom cover member and lying parallel to the first end portion of the box; and

(f) said multiple modular collector units being disposed side-by-side with their adjacent manifold pipes connected together, and their covers further including an intermediate cover member which is common to the adjacent units and coupled with the top and bottom cover members of both units.

4,224,927

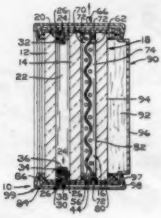
SOLAR COLLECTOR FOR HEATING A FLUID

Pandit G. Patil, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 700,257, Jun. 28, 1976, which is a continuation-in-part of Ser. No. 672,098, Mar. 31, 1976, which is a continuation-in-part of Ser. No. 573,497, May 1, 1975, abandoned. This application Aug. 30, 1978, Ser. No. 938,206

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—449 **9 Claims**



1. A solar air heater, comprising:

a first glass sheet;

a second glass sheet;

a spacer assembly mounted between said first and second glass sheets to provide a dead airspace therebetween, said spacer assembly comprising:

a spacer frame having a breather tube to equalize the air pressure in the dead airspace to ambient air pressure while preventing moisture from moving into the dead airspace; and

a layer of moisture-impervious adhesive on opposed outer surfaces of said spacer frame to prevent the ingress of moisture into the dead airspace;

a solar energy absorber comprising:

a pair of side members;

a pair of baffles mounted between said pair of side members to provide a frame;

an inlet pipe connected to one of said pairs of baffles;

an outlet pipe connected to the other one of said pair of baffles;

a corrugated substrate having solar and infrared energy absorbing surfaces mounted within the frame;

a first series of holes in each of said pair of baffles to pass air across the surface of said substrate; and

a second series of holes in each of said pair of baffles to pass air across the bottom surface of the absorber wherein said first and second series of holes have increased openings as the distance from their respective pipes increases;

a glass plate having an infrared reflective coating on a major surface; and

adhesive for joining said second glass sheet to one side of said frame and said glass plate to the other side of said frame.

4,224,928

COVER FOR SOLAR HEAT COLLECTOR

Frank D. Werner; Lowell A. Kleven; James T. Case, and Roger D. Bloomfield, all of Jackson, Wyo., assignors to Park Energy Company, Jackson, Wyo.

Filed Oct. 19, 1977, Ser. No. 843,685

Int. Cl.² F24J *3/02*

U.S. Cl. 126—450 **10 Claims**

1. A cover sheet assembly for use in connection with a solar heat collector comprising an extruded unitary member comprising a pair of generally coextensive radiant energy transmitting panels spaced apart in a direction perpendicular to the general plane of the cover sheet assembly, and having a longitudinal length and a transverse width, means forming a plurality of individual tubular passageways comprising separated generally parallel walls spaced apart in transverse direction and extending between and fixed to said panels along the longitudinal length of said panels, a plurality of spaced apart, individual rib members each having one free edge and having the other edge fixed to one panel, each positioned in alignment with one of said separated walls and extending along the length of the panels and generally normal to the one panel and extending in a direction away from the second panel, said rib members being narrow in direction parallel to the plane of said cover sheet assembly and being substantially uniform in cross section throughout their length to permit supporting of said rib members at their free edges at any desired location along the longitudinal length thereof.

4,224,929

ENDOSCOPE WITH EXPANSIBLE CUFF MEMBER AND OPERATION SECTION

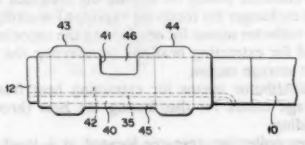
Hiroyuki Furihata, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1978, Ser. No. 957,567

Claims priority, application Japan, Nov. 8, 1977, 52-149794[U]; Nov. 8, 1977, 52-149796[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—5 **10 Claims**



1. An endoscope comprising:

a flexible sheath having two ends;

a control section connected to one of said two ends of the sheath;

an elongated distal end section connected to the other end of the sheath and having an outer periphery;

a single, unitary expansible cuff member mounted on the outer periphery of the distal end section and provided at an intermediate part of said cuff with an opening being defined by said cuff, said cuff member having a portion thereof defining a peripheral edge of said opening, said peripheral edge being sealingly fixed to the outer periphery of the distal end section so that said cuff member is sealingly engaged on said distal end section, said cuff member having an end portion on either end of said opening, said end portions being spaced longitudinally of said distal end section and sealingly fixed to the outer periphery of the distal end section;

an illumination window and observation window both provided in the outer periphery of said distal end section and disposed within said cuff member;

fluid passage means extending through said sheath and in said control section and said distal end section and communicating with said cuff member for conducting a fluid into said cuff member for inflation thereof, the sealing contact between said cuff and said distal end section adjacent said cuff member opening preventing fluid from escaping from said cuff member;

fluid inlet means provided on said control section and communicating with said fluid passage means for conducting fluid from a source into said fluid passage means;

illuminating light transmitting means extending through said sheath and in said distal end section and control section and having two end areas, one end area being optically connected to said illumination window;

observation light transmitting means extending in said distal end section and through said sheath and said control section having two extremities, one extremity being optically connected to said observation window;

an ocular mounted on said control section and optically connected to another extremity of said observation light transmitting means;

a chamber formed in said distal end section and opening at that portion of the outer periphery of said distal end section which is disposed in the opening of the cuff member, said chamber allowing an elongated medical instrument to be extended out of the chamber and into the space between said cuff member end portions for contacting the inner surface of a body cavity in which said distal end section is located;

a channel extending through said sheath and in said distal end section and said control section and having first and second ends, said first end communicating with said chamber, said channel being adapted to guide a medical instrument to said chamber; and

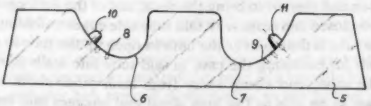
an instrument inlet mounted on said control section and communicating with said channel second end.

4,224,930

METHOD OF AND APPARATUS FOR THE PERFORMING OF A THERAPEUTIC EFFECT

Hugo Nielsen, Kirkealle 14, DK-6510, Gram, Denmark

Filed May 18, 1977, Ser. No. 798,254
Claims priority, application Denmark, May 25, 1976, 2292/76
Int. Cl.[2] A61H *1/02*
U.S. Cl. 128—25 B **7 Claims**



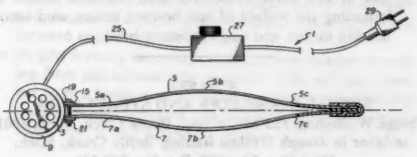
1. A method of producing a therapeutic effect in the human body comprising the step of simultaneously applying localized pressure in a relatively small area to the right side of the right foot and the left side of the left foot at a point adjacent the connection of the achilles tendon and the heel at the vesicular point number 60 of each foot.

4,224,931

VIBRATING APPARATUS

Leon Nelkin, 8515 Ariel, Houston, Tex. 77074

Filed Jun. 13, 1978, Ser. No. 915,243
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—32 **8 Claims**



1. In an improved vibrator apparatus adapted to be installed with an intermediate cushioning surface between the apparatus and the user thereof comprising:

a vibrating motor having electrical connection means extending therefrom for insertion into an electrical socket,

first and second rigid arm means affixed to the motor and extending therefrom in cantilever fashion in such manner as to receive and transmit vibratory forces from said motor,

said arm means arranged in respective planes separated from each other so that each is free to receive vibratory forces perpendicular to said planes from the motor and to transmit such forces along the length thereof, the vertical distance of said arms from one another being greater intermediate the length thereof than at the ends thereof, so that maximum vibratory effect is transmitted from that section of the arms which is greater distance from the opposing arm than is another section, and

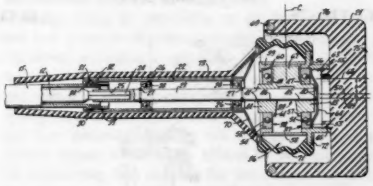
connecting means affixing the remote ends of said cantilever arms together so that the vibratory force induced into one arm is transmitted to the other arm so as to cause amplification of the vibration thereof.

4,224,932

VIBRATORY MASSAGE UNIT

Norman E. Farb, 10705 Providence Rd., Villa Park, Calif. 92667

Filed Apr. 9, 1979, Ser. No. 28,577
Int. Cl.[3] A61H *1/00*
U.S. Cl. 128—36 **23 Claims**



1. A handle for a vibratory massage unit connectable to a drive cable within a coaxial cable sheath comprising:

an elongate handle sleeve connectable to said cable sheath;

a drive shaft connectable to said drive cable;

first bearing means for supporting said drive shaft coaxially within said handle sleeve for rotation relative thereto;

housing means surrounding said drive shaft;

second bearing means operatively connected to said housing means;

means for connecting said second bearing means to said drive shaft for permitting rotation of said drive shaft relative to said housing means, said connecting means supporting said second bearing means with the axis thereof offset on one side of said drive shaft whereby said housing means translates laterally in a circular pattern upon rotation of said drive shaft;

an applicator head connectable to said housing means; and

a counterweight operatively connected to said drive shaft with the axis of said counterweight offset on an opposite side of said drive shaft from said one side thereof for balancing the weight of said housing means, said second bearing means, and said applicator head.

4,224,933

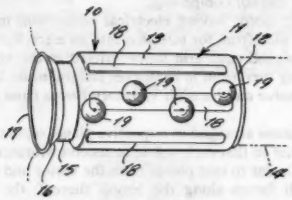
SEXUAL STABILIZER AND STIMULATOR

Joseph W. Reiling, 112 Miller Ave., Battle Creek, Mich. 49017, assignor to Joseph William Reiling, Battle Creek, Mich.

Filed Oct. 10, 1978, Ser. No. 949,621

Int. Cl.[2] A61F *5/00*; A61H *19/00*

U.S. Cl. 128—79 **2 Claims**



1. A sexual stabilizer and stimulator, comprising, in combination, a tubular sleeve of thin surgical latex, a constriction at opposite ends of a main portion thereof, means for maintaining a penis erect even when flaccid, and means to excite the female partner of a sex act; the first said means comprising a plurality of thin, spaced-apart stays embedded in said main portion; and the second said means comprising a row of soft balls tethered to an outer side of said sleeve.

4,224,934

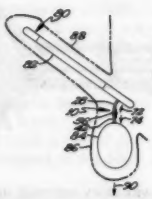
MEDICAL PROSTHETIC PULL VALVE AND SYSTEM FOR USING SAME

F. Brantley Scott, Houston, Tex., and John H. Burton, Minneapolis, Minn., assignors to American Medical Systems, Inc., St. Louis Park, Minn.

Filed Apr. 11, 1979, Ser. No. 28,979

Int. Cl.[3] A61F *5/00*

U.S. Cl. 128—79 **14 Claims**



1. An implantable medical prosthetic pull valve comprising:

a valve member;

a valve support having a support channel therethrough;

a resilient member extending between said valve member and said valve support;

a seating member having a seating surface and further having a channel therethrough;

an outer member attached to said valve support and said seating member and having an extensible section positioned between said valve support and said seating member such that the space between said valve support and said seating member is encased by said extensible section; and

wherein said resilient member is compressible and wherein said extensible section has a contracted state and an extended state, so that when said extensible section is in said contracted state then said valve operates as a check valve, and opens when said resilient member is caused to compress and so that when said extensible section is in said extended state then said valve is caused to open.

4,224,935

BAG PROTECTOR FOR LEG CAST

John A. Metelnick, 724 Clinton Pl., Evanston, Ill. 60201

Filed Jun. 1, 1979, Ser. No. 44,568

Int. Cl.[3] A61F *13/00*

U.S. Cl. 128—82 **7 Claims**

1. A cover for enclosing a cast on a limb of the user, said cover comprising:

an elongate flat tube of water impermeable flexible material having a pair of oppositely disposed side edge pleats extending longitudinally of same for the length of same,

said tube at one end of same being freely openable and at the other end of same having opposite sides of said tube rectilinearly bonded together across the width of said tube including said pleats to define a sealed closed end seam at said other end of said tube,

said tube thereby defining a pair of opposed side walls of uniform width extending between said ends of said tube and respectively separated along the length of the tube by the respective side edge pleats that thereby define longitudinally extending side edges of the tube that extend the length of said tube,

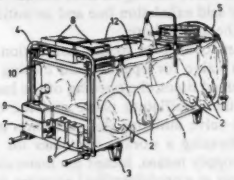
said tube side walls adjacent said closed end seam each having secured to the exterior or same a length of resilient padding in sheet form having a plurality of perforations exposing the respective side walls,

whereby the limb may be inserted into the tube through said open end thereof to bring the distal end of the limb against said closed end seam with said tube side edges unfolding as the tube is drawn over the limb to open up the tube to the limb for enclosing the cast, in said tube side walls of said tube other end swing away from each other about said seam as an axis as the limb distal end engages said seam interiorily of the tube to dispose said padding layers for supporting the limb through the tube.

4,224,936
TRANSIT ISOLATOR

Walter H. Cox, Weybridge, England, assignor to Vickers Limited, London, England

Filed May 31, 1979, Ser. No. 44,228
Claims priority, application United Kingdom, May 31, 1978, 25417/78
Int. Cl.³ A61F 13/00
U.S. Cl. 128—132 R 4 Claims

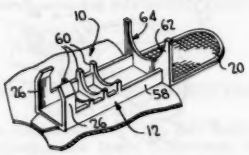


1. A transit isolator which comprises: (i) a first frame including (a) a pair of spaced generally parallel horizontal members, from which is slidably suspended an isolator in the form of a flexible film envelope having a plurality of sleeves in the sides thereof, (b) a basal structure adapted to support said horizontal members, and (c) an end frame defining a closable port through which a patient may be conveyed into and out of the flexible film envelope; and (ii) a second frame comprising an end section adapted to slide along the horizontal members of said first frame and to which is attached that end of said flexible film envelope remote from the closable port, whereby movement of said end section along the horizontal members of the first frame causes the flexible film envelope to become compressed in the manner of a concertina in the direction towards said closable port.

4,224,937
STABILIZING FITTING FOR AN INTRAVENOUS CATHETER

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Continuation-in-part of Ser. No. 905,399, May 12, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 5,032
Int. Cl.³ A61M 25/02, 5/00
U.S. Cl. 128—133 14 Claims



6. A stabilizing fitting for securing to a patient's skin an intravenous catheter having a catheter hub of the type which includes a boss with an expanded transverse dimension, said fitting comprising:

a laminar base member having a longitudinal axis, an upper surface and a lower surface;

pressure-sensitive adhesive means on said lower surface;

a catheter hub-retaining cradle secured on said upper surface and having a bottom, an open top, a forward end, a rearward end and resilient sidewalls substantially parallel to and symmetrically disposed on opposite sides of said longitudinal axis proximate said forward end, said sidewalls being formed to resiliently engage and laterally locate the catheter hub pressed downwardly to the bottom of said cradle through said open top, said sidewalls being spaced to engage the catheter hub forwardly of said boss, said rearward end being defined by a rear support wall having a top edge which is recessed to a height above said bottom of said cradle to receive and support the catheter hub at a hub location rearward of said boss such that the catheter hub, when supported in said cradle, is disposed at a small angle relative to said upper surface wherein the hub diverges from said upper surface in a rearward direction, the sides of said cradle between said resilient sidewalls and said rear support wall being open to accomodate catheter hubs having expanded transverse dimensions;

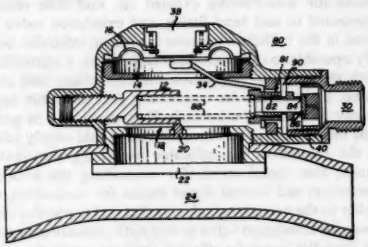
locating means comprising part of said cradle and disposed between said sidewalls and said support wall for maintaining the catheter hub in position longitudinally of said axis with the catheter projecting substantially axially from said forward end of said cradle; and

a tab grip forming an extension of said base member extending from and substantially co-planar with said base member from a location on said base member outside the area on which said adhesive means is disposed, said tab grip being free of said adhesive means.

4,224,938
BALANCED SECOND STAGE FOR A TWO STAGE DEMAND REGULATOR

Said S. Hilal, Long Beach, Calif., assignor to American Underwater Products, San Leandro, Calif.

Filed Jan. 29, 1979, Ser. No. 7,567
Int. Cl.³ B63C 11/16
U.S. Cl. 128—204.26 18 Claims



1. A balanced stage for a regulator for divers, comprising:

an enclosure including a low pressure chamber having an opening sealingly covered by a flexible diaphragm and outlet means adapted to be connected to a mouthpiece, one side of said diaphragm being exposed to the pressure in said low pressure chamber and the other side to ambient pressure;

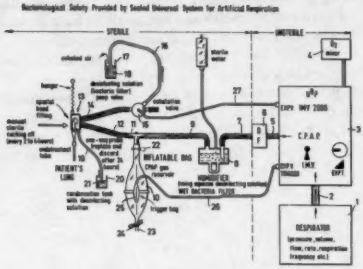
an intermediate pressure air supply; and

air valving means for providing an air flow path between said low pressure chamber and said air supply, said valving means including a stationary valve seat, a valve element having a gas passage therethrough cooperating with said seat and movable between a closed position and an open position to allow air from said air supply to flow into said low pressure chamber via said gas passage, and a flexible means nonslidingly affixed to said valve element for supporting said element for movement between said closed and open positions, said flexible means being configured and placed to sealingly separate said low pressure chamber and said air supply except for gas flow through said gas passage when said valve element is in said open position, and actuating means connected between said diaphragm and said valve element to move said valve element between sand open and closed position to thereby control the pressure in said low pressure chamber.

4,224,939
BACTERIA-TIGHT SYSTEM FOR ARTIFICIAL RESPIRATION

Volker Lang, Spitzwegstrasse 63b, 8012 Ottobrunn, Fed. Rep. of Germany

Filed Jun. 6, 1978, Ser. No. 913,086
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1977, 2725515
Int. Cl.[3] A61M *17/00*
U.S. Cl. 128—205.13 11 Claims

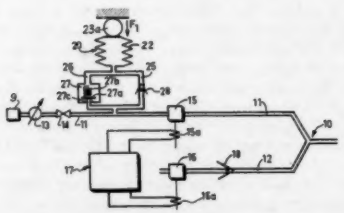


1. An appliance for establishing a bacteriologically safe connection between a respirator used in artificial respiration and an endotracheal tube, comprising a head fitting adapted to be mounted on the endotrachael tube; flexible supply tube means for supplying inhalable gas; flexible withdrawing tube means for withdrawing exhaled air, said tube means being connected to said head fitting; and exhalation valve incorporated in the withdrawing tube means; an inflatable bag manually operable to effect artificial respiration; a controller in step with the artificial respiration for controlling said exhalation valve; a tee fitting for connecting said inflatable bag to the supply tube means; a bacteria filter positioned in said supply tube means, said controller connecting said supply tube means to the respirator, the inflatable bag being provided with a sensor; first signal means for connecting the sensor to the connector; and second signal means for connecting the controller to the exhalation valve so that said controller closes and opens the exhalation valve in step with pressure changes resulting from the manually effected artificial respiration.

4,224,940
RESPIRATORS

Jean-Pierre Monnier, Maurepas, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Continuation-in-part of Ser. No. 775,440, Mar. 8, 1977, abandoned. This application Jul. 10, 1978, Ser. No. 923,453
Claims priority, application France, Mar. 19, 1976, 76 07945
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.16 14 Claims



1. In a respirator for supplying breathable gas to a user and having an insufflation phase and an exhalation phase, in combination:

a user circuit including user connection means, an insufflation line having one end connected to said user connection means and an exhalation line having one end connected to said user connection means;

supply means for introducing breathable gas under pressure to the opposite end of said insufflation line;

an insufflation valve in the insufflation line;

an exhalation valve having an inlet connected to the opposite end of said exhalation line and an outlet communicating with the atmosphere;

control means connected to the insufflation valve and the exhalation valve for opening and closing said valves at predetermined times, the opening of the insufflation valve initiating the insufflation phase and the opening of the exhalation valve initiating the exhalation phase;

a reservoir forming a storage container for breathable gas from the supply means, means for maintaining the gas in the reservoir at a predetermined pressure greater than the pressure within the insufflation line at the beginning of the insufflation phase;

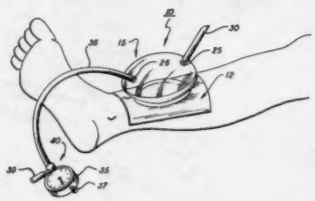
conduit means including a pair of branch conduits connected in parallel relationship between the storage container and the insufflation line upstream of the insufflation valve, unidirectional flow means in one of said branch conduits for supplying breathable gas from said storage container to the user circuit during the insufflation phase; and

unidirectional flow means in said other branch conduit responsive to the maximum insufflation pressure in said insufflation line for supplying breathable gas to said reservoir when said maximum insufflation pressure is reached, whereby the pressure in said container is maintained lower than that in said circuit during the final portion of the insufflation phase and the initial portion of the exhalation phase.

4,224,941
HYPERBARIC TREATMENT APPARATUS

Oscar G. Stivala, 10 Whited St., Little Falls, N.Y. 13365

Filed Nov. 15, 1978, Ser. No. 960,962
Int. Cl.[3] A61M *35/00*
U.S. Cl. 128—207.26 11 Claims



1. Apparatus for administering hyperbaric treatment gas to a region of the skin including

a pliable pad having a centrally located opening formed therein for framing the skin treatment region, the pad having an adhesive coating on the outer surface thereof whereby it may be securely attached to the surface of the skin adjacent the treatment region,

a pliable annular collar bonded to the inner surface of the pad with the collar completely surrounding the opening formed in said pad,

a gastight bag bonded to the outer periphery of said collar to provide a hyperbaric treatment chamber over said opening and also over the collar, and

a gas inlet port and a gas outlet port operatively connected to the bag whereby a supply of treatment gas under pressure may be transported into and out of the treatment

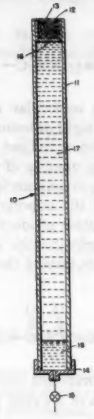
chamber for providing treatment to the skin and for applying a sealing pressure against the collar.

4,224,942

CELL FRACTIONATING METHOD

Anna F. Wu, and Tai T. Wu, both of Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Filed Apr. 25, 1979, Ser. No. 33,118
Int. Cl.³ B03D 3/00
U.S. Cl. 128—214 R **12 Claims**



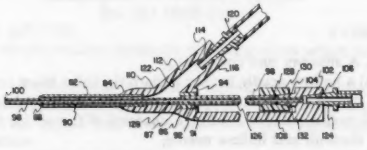
8. A method of treating a population of red blood cells comprising both discocytes and echinocytes to remove the echinocytes without destroying the transfusability of the discocytes, comprising the steps of exposing the entire red cell population to velocity sedimentation in a solution of isotonic saline buffered to a pH of about 7.4 and containing in solution a cell-compatible disaccharide or polysaccharide in an amount sufficient to adjust the solution to a density within the range of about 1.005 to 1.015, collecting and separating the cells so exposed into at least two fractions based on differences in sedimentation rate, the red cells of one of said fractions consisting substantially entirely of echinocytes and the cells of another of said fractions consisting substantially entirely of discocytes.

4,224,943

CANNULA AND METHOD FOR BIDIRECTIONAL BLOOD FLOW

Robert H. Johnson, Sandy; Dixon A. Ford, Farmington; Gordon S. Reynolds, Bountiful, and James L. Sorenson, Salt Lake City, all of Utah, assignors to Sorenson Research Co., Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 821,848, Aug. 4, 1977, abandoned. This application Jan. 24, 1979, Ser. No. 6,053
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214.4 **10 Claims**



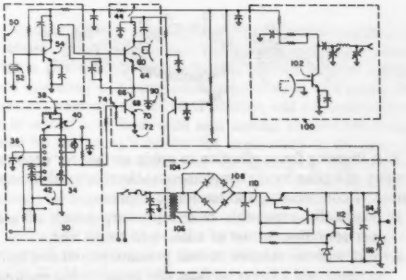
1. A cannula assembly comprising in combination:
a bifurcated cannula hub and a first hollow cannula mounted in the hub at a first location so as to communicate with one branch of the bifurcated hub;
a second hollow cannula essentially coextensible with the first cannula and mounted in the hub at a second location so as to communicate with the other branch of the bifurcated hub, the second location being spaced from the first along the axis of the cannula;
means defining a first flow path between the first cannula and the corresponding one branch of the hub and means defining a second flow path between the second cannula and the corresponding other branch of the hub, the first and second flow paths being attachable to extracorporeal fluid lines and being separated one from the other;
a hollow venipuncture needle telescopically disposed within the first cannula and around said second cannula and projecting therebeyond to facilitate introduction of both the first and second cannulae into a blood vessel; and
means for displacing the venipuncture needle away from the blood vessel after cannulation thereof such that at least a portion of the needle is permanently retained within the assembly, said displacing means accommodating venipuncture without interferring with the communication of the flow paths to the extracorporeal fluid lines, thereby facilitating essentially simultaneous exposure of both the first and second cannulae to blood within the vessel.

4,224,944

EPILATION APPARATUS

Wallace A. Roberts, 88 N. Main St., Bellingham, Mass. 02019

Continuation-in-part of Ser. No. 756,897, Jan. 5, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 935,091
Int. Cl.³ A61B 17/41
U.S. Cl. 128—303.18 **1 Claim**



1. An improved epilation apparatus having a circuit for producing for a predetermined time a high frequency wave output at a probe, such apparatus comprising:
(1) means for producing a pulse having a duration of a predetermined time;
(2) a high frequency oscillator operating in the range of approximately 13 MHz;
(3) electronic switching means, having first and second inputs, with the first input connected to the high frequency oscillator and the second input connected to the pulse producing means, in such fashion as to produce a high frequency output over the approximate duration of a pulse present at the second input, such electronic switching means including
(a) a first transistor, connected as an amplifier having an input between its base and its emitter and an output between its collector and its emitter, and also connected so that its input, being the first input of the electronic switching means, is connected to the high frequency oscillator output;
(b) a resistor, connected at one end to the emitter of the first transistor;
(c) a second transistor, connected as an amplifier having an input between its base and its emitter and an output

between its collector and its emitter; and also connected (i) so that its collector is connected to the other end of the resistor so as to place the output of the second transistor in series with the output of the first transistor, the current through this series combination providing the high frequency output of the electronic switching means, and (ii) so that the second transistor's input, being the second input of the electronic switching means, receives the output from the pulse-producing means;

(d) a capacitor, connected between the collector of the second transistor and its emitter, such capacitor being charged and discharged through the series combination of the outputs of the first and second transistors in such a way that the amplitude of the high frequency output of the electronic switching means gradually rises and decays over the approximate duration of a pulse present at the second transistor's input;

(4) a transistor power output stage having an input connected to the high frequency output of the electronic switching means and an output; and

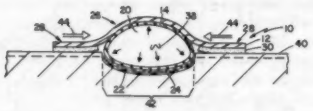
(5) an epilation needle probe connected to the output of the transistor power output stage.

4,224,945

INFLATABLE EXPANSIBLE SURGICAL PRESSURE DRESSING

Jonathan Cohen, 96 Larchwood Dr., Cambridge, Mass. 02138

Filed Aug. 30, 1978, Ser. No. 938,025
Int. Cl.³ A61B 17/12
U.S. Cl. 128—325 **8 Claims**



1. A dressing for application to a skin surface for promoting healing of lesions by the simultaneous selective localized application of compression and tension, comprising

an elastically expansible closed pressure pouch of a size corresponding to that of a lesion to be dressed,

a sheet inelastic relative to said pressure pouch and having an upper and a lower surface, said pouch being secured to said sheet lower surface substantially centrally of said sheet and defining a sheet pressure region,

said sheet extending laterally beyond said pouch in every direction to define a continuous peripheral sheet tension zone,

an adhesive layer on said continuous peripheral sheet tension zone lower surface defining a continuous adhesive zone completely surrounding said pouch for adhering said dressing to the intact skin surface surrounding said lesion and positioning said pouch adjacent said lesion, and

pouch-inflating means for increasing the pressure within said pouch after said dressing adhesive zone has been secured to said intact skin surface,

whereby expansion of said pouch moves said sheet pressure region away from said lesion and maintains said region in such position, thereby exerting tension on said continuous peripheral sheet tension zone, said tension being everywhere centripetally directed and being transmitted through said adhesive region to the intact skin surrounding said lesion, and

whereby pressure of said expanded pouch against said inelastic sheet pressure region and against said lesion exerts compression on said lesion.

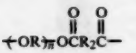
4,224,946

SURGICAL SUTURES DERIVED FROM SEGMENTED POLYETHER-ESTER BLOCK COPOLYMERS

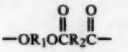
Donald S. Kaplan, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 14, 1978, Ser. No. 933,224
Int. Cl.³ A61L 17/00
U.S. Cl. 128—335.5 **7 Claims**

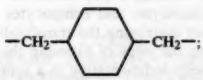
1. A non-absorbable monofilament sterile surgical suture or ligature having an attached needle comprising a polymeric block (A) consisting of a polyalkylene ether of the formula



having a number average molecular weight of from about 500–3000 wherein R is a straight or branched chain alkyl group of from about 2 to 10 carbon atoms and R_2 is 1,4-phenylene or cyclohexylene and n is the number of repeating units and is defined by R and R_2, by R_1 in polymeric block (B), and by the total molecular weight of the copolymer; and a polymeric block (B) which is the reaction product of an aromatic dicarboxylic acid or a cycloaliphatic acid, and a short chain aliphatic or cycloaliphatic diol, having the formula



wherein R_1 is a straight or branched chain alkyl group of from about 2 to 10 carbon atoms or a cyclic group having the formula



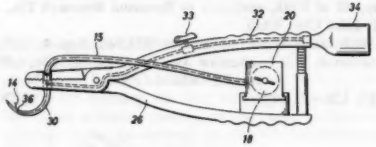
and R_2 is 1,4-phenylene or cyclohexylene, said block (B) comprising from about 30% to 95% of said copolymer, and said copolymer having a number average molecular weight of from about 25,000 to 30,000, such that said suture has good flexibility, good fatigue life and high tensile strength.

4,224,947

SUTURING APPARATUS

Mamoru Fukuda, 1260 Hardy Dr., Bridge City, Tex. 77611

Filed Feb. 5, 1979, Ser. No. 9,476
Int. Cl.³ A61B 17/06
U.S. Cl. 128—340 **9 Claims**



1. A suturing tool comprising:

(a) a hollow needle having a sharp tip and a blunt end, said needle including an exit aperture proximate said tip;

(b) reel means for holding a quantity of thread for feeding through said hollow needle;

(c) feed means for actuating said reel means for advancing thread through said needle;

(d) flexible passage means connecting said needle to said reel

means providing a passage for advancing the thread through said needle;

(e) handle means for rewinding excess thread advanced by said reel means; and

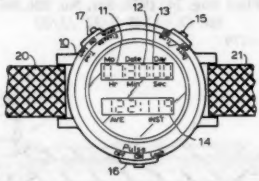
(f) forceps means for manipulating said needle for suturing ruptured or incised tissue.

4,224,948

WRIST BORNE PULSE METER/CHRONOMETER

Frank B. Cramer, 14800 Alexander St., Mission Hills, Calif. 91345, and J. Lawrence Semar, 17422 Village Dr., Tustin, Calif. 92680

Filed Nov. 24, 1978, Ser. No. 963,278
Int. Cl.³ A61B 5/02
U.S. Cl. 128—690 **15 Claims**



1. A combined digital watch and pulse rate meter comprising:

a case having an upper face and a lower face;

the upper face including display means for display in digital form time of any information;

said display further including means for displaying the six digits of pulse information;

a timing signal generator within said case;

timing circuitry coupled to said timing signal generator for deriving fractions of seconds, seconds and minutes information;

means for displaying said time information on said display;

a transducer on the inner face of said case positionable in pulse sensing relationship with the wearer;

said transducer coupled to signal processing circuitry for deriving the pulse rate of the wearer;

said signal processing circuitry coupled to said timing signal generator to provide a time base for pulse measurement accuracy equal to the accuracy of the time of day signal;

means for coupling pulse information from said signal processing circuitry to three digits of said display on a pulse by pulse basis to provide instantaneous pulse rate display;

means for storing the last "N" pulse rates detected;

means for averaging the last "N" pulse rates stored; and

means for coupling the average pulse rate to the last set of three digits of said display whereby the pulse rate average is displayed for the wearer.

4,224,949

METHOD AND ELECTRICAL RESISTANCE PROBE FOR DETECTION OF ESTRUS IN BOVINE

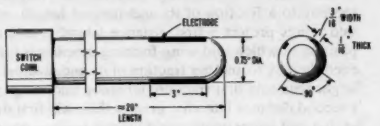
Norman R. Scott, and Rick Marshall, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 17, 1977, Ser. No. 852,269
Int. Cl.² A61B 5/05
U.S. Cl. 128—734 **9 Claims**

1. A bovine vaginal probe for detecting estrus which comprises:

(a) a relatively non-conductive support means, having a generally cylindrical shape, adapted for insertion into a bovine vaginal tract and contact with the vaginal mucus therein;

(b) having secured to the surface thereof at least one pair of substantially parallel electrodes aligned parallel to or at an angle of less than 45° from the longitudinal axis of said support means, said electrodes being separated from each other by at least 45°;



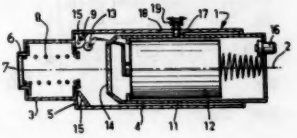
(c) said electrodes being electrically connectable to an AC ohm-meter adapted to determine the electrical resistance of vaginal mucus between said electrodes.

4,224,950

APPARATUS FOR MEASURING THE AMOUNT OF SEBUM SECRETED BY THE SKIN OF A LIVING SUBJECT

Pierre Bore, Montfermeil, and Lucienne Tourenq, Livry-Gargan, both of France, assignors to L'Oreal, Paris, France

Filed May 25, 1979, Ser. No. 42,551
Claims priority, application France, May 31, 1978, 78 16231
Int. Cl.³ A61B 5/00, 10/00
U.S. Cl. 128—759 **11 Claims**



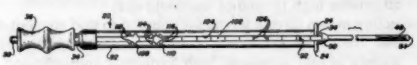
1. Apparatus for measuring the amount of sebum secreted by the skin of a living subject, said apparatus comprising: a casing having a side wall; a sample holder carried by said casing, means mounting said sample-holder relative to said casing for movement between an extended position and a retracted position in which it is flush with said casing; translucent means carried by said sample holder for application to the zone of skin to be studied, a calibrated spring urging said sample-holder into said extended position; a scale within the casing; reference means on said scale; and a light source within the casing for emitting a luminous flux toward said scale; so that the amount of sebum deposited on the sample-holder can be determined by observation of the reference mark of the scale through the translucent element.

4,224,951

GYNECOLOGICAL INSTRUMENT

Harrith M. Hasson, 345 Fullerton Pkwy., Chicago, Ill. 60614

Filed Nov. 30, 1978, Ser. No. 965,170
Int. Cl.³ A61B 5/10
U.S. Cl. 128—778 **13 Claims**



1. In an intra-uterine instrument of the type having a handle assembly and a probe assembly mounted on said handle assembly and extending in a longitudinal direction for insertion into a uterus, said probe assembly including foreshortening means and a wing-forming member which is secured to said foreshortening means and which is operable to collapse outwardly into a laterally winged configuration when foreshortened, so that said wings may contact the walls of the uterus, the improvement comprising:

actuating means mounted on said handle assembly and operatively engaging said foreshortening means for establish-

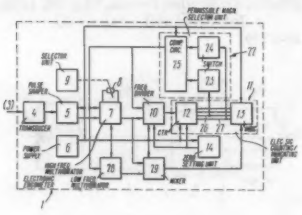
ing a plurality of separate stable operating positions for said foreshortening means, including one position in which said wing-forming member is foreshortened thereby to a fraction of its undeformed length, whereby said wings project a first distance laterally, and another position in which said wing-forming member is foreshortened thereby to another fraction of its undeformed length, larger than said first fraction, whereby said wings project a second distance laterally, greater than said first distance, so that said wings contact said uterine walls at positions of greater and lesser insertions of said probe assembly into said uterus.

4,224,952

ELECTRONIC ERGOMETER

Georgy I. Sidorenko, ulitsa Pulekhova, 7, kv. 37, and Vladimir I. Stankevich, ulitsa Krasnoarmeiskaya, 32, kv. 15, both of Minsk, U.S.S.R.

Filed Aug. 7, 1978, Ser. No. 931,525
Int. Cl.³ A61B 5/10
U.S. Cl. 128—782 **4 Claims**



1. An electronic ergometer for measuring work performed by an individual in terms of oscillation of the body center of gravity thereof, comprising:

a power supply unit having an output;

transducer means for converting the oscillations of the body center of gravity of said individual into electrical signals provided as an output, said transducer means being implemented as at least one siesmic pickup having an output;

a pulse shaper comprising a threshold element and having a first input, a second input and an output, said first input being coupled to said output of said power supply unit, and said second input being coupled to said output of said transducer means;

an adjustable high frequency multivibrator having a control input, an input and an output of settable frequency, said cntrol input being coupled to said output of said pulse shaper, and said input being coupled to said output of said power supply unit;

a frequency generating circuit operatively associated with said adjustable high frequency multivibrator, having an element for setting the frequency of said output of said adjustable high frequency multivibrator;

selecting means having an output coupled to said element of said frequency generating circuit for selecting the frequency of said adjustable high frequency multivibrator;

a frequency divider having a counting input, a reset input, an input and an output, said counting input being coupled to said output of said adjustable high frequency multivibrator, and said input being coupled to said output of said power supply unit;

a multi-digit counter having a counting input, a reset input, an input and a plurality of bit position outputs equal in number to the number of bit positions of the counter, said counting input being coupled to said output of said frequency divider, and said input being coupled to said output of said power supply unit;

an indicator having a group of inputs, respective inputs of said group of inputs being coupled to corresponding respective bit position outputs of said multi-digit counter;

a zero setting unit having an input and an output, said input being coupled to said output of said power supply unit, said output being coupled to said reset input of said frequency divider and to said reset input of said multi-digit counter; and

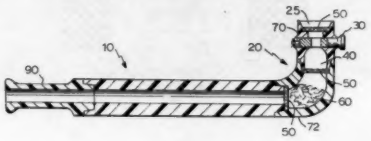
a housing to accommodate said transducer means, said pulse shaper, said adjustable high frequency multivibrator, said selecting means, said frequency divider, said multi-digit counter, said indicator, and said zero setting unit.

4,224,953

PIPE

Socrates Alvarez, 801 NW. 47 Ave., Apt. W-720, Miami, Fla. 33126

Filed Aug. 24, 1978, Ser. No. 936,385
Int. Cl.² A24F 1/22, 13/02
U.S. Cl. 131—179 **7 Claims**



1. A pipe for smoking comprising:

a. a cylindrical valve member, having means for varying its inner diameter, and having one cavity defined on each end of said valve member, one of these cavities being a female terminated burning cavity and the other cavity being a male terminated cooling cavity, wherein said burning cavity has a first step located relatively close to the end of said cylindrical valve member;

b. a first screen tightly fit on said first step inside said burning cavity;

c. a longitudinally hollow L-shaped filtering chamber having a female terminated opening on each end and each one of these openings having a step at enough distance away from each of said filtering chamber ends so as to provide the necessary space for being removably secured to said cooling cavity in said valve member;

d. a pair of screens tightly fit on the steps inside said L-shaped filtering chamber;

e. a mouthpiece capable of being removably secured to either said opening in said L-shaped filtering chamber that is not connected to said valve member or to said burning cavity, thereby providing a choice of sizes to the user.

4,224,954

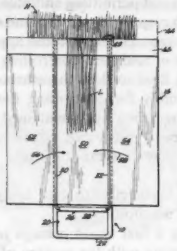
DEVICE FOR USE IN BLEACHING OR COLORING HAIR IN DISCRETE PORTIONS FOR ARTISTIC EFFECT

Michael L. Stahl, 7700 SW. 135th Ave., Miami, Fla. 33183

Filed Jul. 5, 1978, Ser. No. 921,981
Int. Cl.² A45D 7/00
U.S. Cl. 132—7 **10 Claims**

1. A device for use in bleaching and coloring hair comprising a generally planar base member of a predetermined length and width, including first and second, end portions and opposed longitudinal side edge portions; a generally U-shaped top member including a transverse portion, hinged along a top surface of said first end portion and a pair of elongated leg portions normally disposed respectively along top surfaces of said longitudinal side edge portions, and a moisture impervious flexible sheet for insertion between said base member and U-shaped member, said sheet including a central portion sized to substantially cover a top surface of said planar base member from said hinge to said second end, when so inserted, and including opposed outwardly extending wing portions of suffi-

cient widths to cover said central portion in an overlapping relation when said wing portions are folded oppositely inwardly over said legs, and said sheet sized to include an end portion extending outwardly from said end portion of said planar base, which end portion when folded over in a lapped engagement with said overlapped wing portions define a packet for containing said lock of hair and any fluid applied to



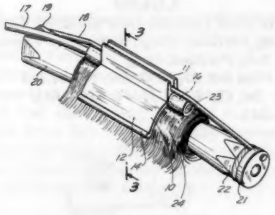
said lock of hair, characterized by the feature that, in operation, the device is slid free of said packet containing said lock of hair and fluid by means of said hand grip portion, so that the device can then be used again for another lock of hair while said packet remains on the head, and the operation continued until a sufficient number of locks are colored or bleached for artistic effect.

4,224,955

SHEATH FOR TEMPERATURE SENSING UNIT

Carl E. Meyerhoefer, Little Neck, and Carl H. Meyerhoefer, Huntington Station, both of N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Feb. 7, 1979, Ser. No. 9,923
Int. Cl.³ A45D 2/12
U.S. Cl. 132—33 R **1 Claim**



1. In a sheath to hold a temperature sensing unit in place in hair wrapped around a curling rod, said sheath comprising a top elongated channel portion, a pair of opposed downwardly and outwardly projecting curved wings integrally connected to said channel, and a hollowed portion below the channel, the improvement wherein the radius of curvature of said wings increases with the distance from the channel.

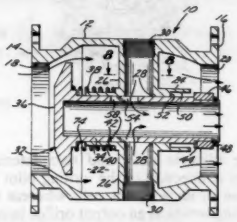
4,224,956

ADJUSTABLE PROPORTIONING VALVE

Richard F. Klein, 20911 Via Verde, Covina, Calif. 91722

Continuation-in-part of Ser. No. 774,594, Mar. 7, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,244
Int. Cl.³ G05D 11/03
U.S. Cl. 137—114 **40 Claims**

8. A fluid proportioning valve which comprises:
tubular body structure having a first fluid inlet for receiving a first fluid and a second fluid inlet for receiving a second fluid and having an outlet,
first fluid passage means in said body structure providing communication for passage of said first fluid from said first inlet to said outlet,
second fluid passage means in said body structure providing communication for passage of said second fluid from said second inlet to said outlet for mixing of said second fluid with said first fluid,
valve element structure movably mounted in said body structure for displacement from a first position blocking said second passage means to a second position at least partially clearing said second passage means, and
means engageable between said body and element structures adjustably limiting the extent of displacement of said element structure in said second position so as to adjust the proportion of said second fluid that is mixed with said first fluid,
said displacement limiting means comprising first and second



stop means on the respective said structures which are in opposed, spaced-apart relationship in said first position of said element structure and are engageable against each other in said second position of said element structure, at least one of said stop means being adjustable,
said stop means on the respective said structures in said first position of said element structure having a plurality of discrete predetermined spacings therebetween that are respectively selectable by adjustment of said adjustable stop means to provide respective discrete predetermined displacements of said element structure in its said second position,
said valve element structure comprising a piston slidably mounted in said body structure for displacement in a direction generally from said first fluid inlet toward said outlet,
said piston comprising a stem portion substantially blocking said second passage means in said first position and at least partially opening said second passage means in said second position.

4,224,957

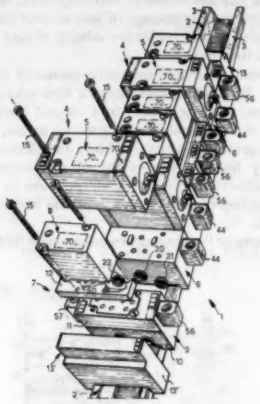
MODULAR SYSTEM FOR OBTAINING PNEUMATIC LOGIC CIRCUITS

Maurice Darves, La Chausse St Victor, and Roland Martinet, Blois, both of France, assignors to Climax France S.A., Blois, France

Filed Jun. 15, 1978, Ser. No. 915,810
Claims priority, application France, Jun. 17, 1977, 77 18714
Int. Cl.³ F15C 5/00
U.S. Cl. 137—270 **9 Claims**

2. A system for assembling at least one pneumatic active logic cell performing a bistable storage function with pneumatic passive logic cells performing AND, OR, NOT, time-delay and other logic functions for obtaining the automation of a machine working cycle, comprising connecting bases on which are mounted said cell, a rail serving as a support for said bases which are resiliently lockable on said rail, said bases automatically ensuring logic pneumatic connections between

said cells, an initial module and a final module mounted at both ends of the chain defined by the whole series of juxtaposed cells, wherein each active cell is removably mounted on a base comprising a storage feed pressure transfer conduit, pilot conduits for storage writing and for clearing respectively, con-



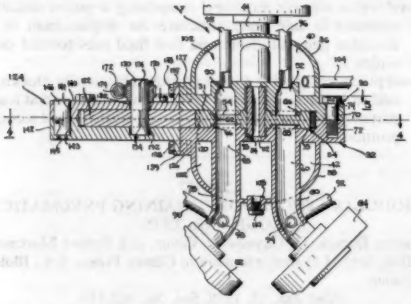
trolled by the adjacent cells, and two external connecting fittings, one for connection of the writing pilot conduit to the connecting base of an adjacent cell, whereas the other said connecting fitting serves as an output orifice in communication with the connecting base of the other cell adjacent to said active cell.

4,224,958

VALVE DEVICE FOR DIVERTING AND COMBINING FLUID FLOWS

Stephen J. Kaplan, 4420 Cezanne Ave., Woodland Hills, Calif. 91364, and Ladislaus S. Lengyel, 25623 Bellerise Dr., Valencia, Calif. 91355

Filed Dec. 19, 1977, Ser. No. 862,289
Int. Cl.³ F16K *11/06, 49/00, 3/02*
U.S. Cl. 137—340 **16 Claims**



1. A valve device for controlling flow of a fluid which is temperature controlled during flow through said valve device, said valve device comprising:

(a) a first plate having at least first and second openings therein for receiving a fluid,

(b) a second plate having at least first and second openings to receive a fluid passing through the openings of said first plate,

(c) a shiftable third plate interposed between said first and second plates and having at least first and second openings which are selectively communicatable with the respective first and second openings in the first and second plates when the third plate is shifted to certain fluid flow positions,

(d) a jacket disposed around portions of said first, second and third plates and forming a heat controlling chamber therein to receive a heat regulating fluid,

(e) a central shaft extending through said first and second and third plates and permitting shiftable movement of said third plate with respect to said first and second plates, said shaft having a central bore located approximately in the central portion of said heat controlling chamber for said heat regulating fluid to flow therethrough.

11. A valve assembly for controlling the flow of a liquid capable of hardening when not maintained in a temperature controlled environment, said valve assembly comprising:

(a) valve body means having an intake manifold formed therein,

(b) an inlet pipe connected to said body for introducing liquid into said manifold,

(c) means forming a first liquid passage in said valve body and communicating with the portion of said manifold,

(d) means forming a second liquid passage in said valve body and communicating with another portion of said manifold forming a pair of liquid flow paths,

(e) a valve plate shiftable in said body and having a first opening communicatable with said first liquid passage and a second opening communicatable with said second liquid passage for the passage of said liquid,

(f) said body means having first and second discharge ducts which are communicable with the openings in said plate when said plate is shifted to a proper position,

(g) a pair of first drain pipes, each being connected to one of said first and second liquid passages for draining the liquid from at least one of said liquid passages and said manifold, and

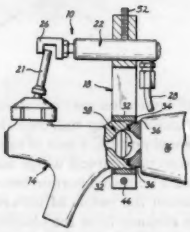
(h) a pair of second drain pipes, each being connected to one of said first and second discharge ducts for draining the liquid from at least one of said discharge ducts.

4,224,959

CLAMP FOR LIQUID-DISPENSING VALVE

James L. Fling, Portland, Oreg., assignor to Custom Systems Associates, Inc., Portland, Oreg.

Filed Jul. 27, 1979, Ser. No. 61,363
Int. Cl.³ F16K *31/44;* **F16L** *3/00*
U.S. Cl. 137—343 **3 Claims**



1. Apparatus usable in combination with a projecting-lever-operated valve unit, a fitting for receiving the unit, and an actuator for operating the unit's projecting lever, where the unit further includes a threaded, mounting portion and the fitting carries a rotatable nut threadably engagable with such mounting portion to secure the nut and fitting, said apparatus comprising

clamping means for clamping onto the nut,

extension means joined to and projecting from said clamping

means for rotating the same with the latter clamped onto the nut, thus to rotate the nut,

rotation of said clamping means under such circumstances, and with the threads in the nut engaged with the valve unit's mounting portion, effecting tightening of the nut on the mounting portion, and consequently, securing of the valve unit and the fitting, and

means formed in said extension means for receiving and supporting said actuator, and for positioning the actuator to enable operation thereby of the valve unit's lever under circumstances with the clamping means clamped onto the nut, and the nut tightened onto the valve unit's mounting portion.

4,224,960

WIND-UP DEVICE FOR FLEXIBLE CONDUITS, SUCH AS HYDRAULIC HOSES

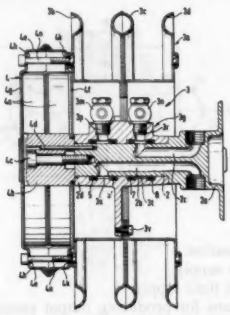
Bill P. P. Nederman, Halalid 3, 252 33 Helsingborg, Sweden

Filed Sep. 5, 1978, Ser. No. 939,690

Claims priority, application Sweden, Sep. 8, 1977, 7710080

Int. Cl.³ B65H *75/48*

U.S. Cl. 137—355.23 **4 Claims**



1. A wind-up device for a flexible conduit, the device comprising:

(a) a wind-up drum on which the flexible conduit is to be wound, said drum including a central drum hub, inner and outer axial ends and inner and outer end walls corresponding, respectively, to said inner and outer axial ends;

(b) a stationary shaft on which said drum hub is rotatably mounted, said shaft having first and second ends, said drum and drum hub being generally disposed between first and second ends so that said outer end of said drum is disposed adjacent said first end of said shaft and said inner end of said drum faces toward said second end of said shaft;

(c) means for fixing said shaft in its stationary condition, said fixing means including a fixation portion of said shaft at said second end of said shaft;

(d) a conduit connection for the flexible conduit, said conduit connection extending from said fixation portion of said shaft, through said shaft and said drum hub, to said drum;

(e) a coil spring assembly including a coil spring having radially inner and outer ends, said coil spring assembly being coupled with said shaft and said drum, whereby said coil spring becomes tensioned when said drum is rotated relative to said shaft upon the unwinding of the flexible conduit from the drum;

(f) said coil spring assembly being detachably mounted to both:

(i) said first end of said shaft; and

(ii) said outer end of said drum;

(g) said coil spring assembly including a spring hub detachably mounted to said first end of said shaft;

(h) means for anchoring the radially inner end of said coil spring with respect to said shaft;

(i) axial pressure bearing means at said first end of said shaft for holding said drum hub in place axially on said shaft;

(j) said spring hub constituting both said anchoring means and said axial pressure bearing means;

(k) means for securing said spring hub to said shaft to normally prevent relative rotation between said shaft and spring hub, said securing means including a fixation element extending from said spring hub into engagement with said shaft, said fixation element being located in an eccentric position with respect to said spring hub and said shaft, said fixation element being movable out of engagement with said shaft to selectively permit relative rotation between said spring hub and said shaft to effect tensioning or release of said coil spring.

4,224,961

TUBULAR ELEMENT FOR PASSING FLOWABLE MEDIA

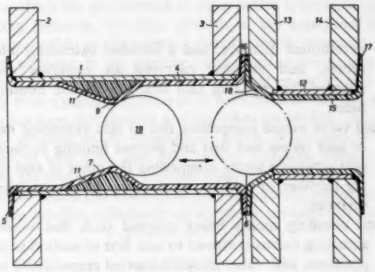
Ernst Schnabel, Postfach 354, 6250 Limburg, Fed. Rep. of Germany

Filed Apr. 24, 1978, Ser. No. 899,175

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 007133[U]

Int. Cl.³ F16K *15/04*

U.S. Cl. 137—375 **10 Claims**



1. A tubular element for passing flowable media, particularly chemically aggressive media, comprising a tubular member bounding an inner passage and having an axis; a synthetic plastic lining cladding said tubular member within said passage and including a plurality of portions which are offset radially inwardly of said inner passage from axially identical and circumferentially spaced locations of the same, so as to support a member which is to be movably accommodated in said inner passage and to form a plurality of hollows between said offset portions of said lining and said tubular member; and a plurality of shaped inserts which are separate from said tubular member and each located in a respective one of said hollows, so as to radially back a respective one of said offset portions of said lining to thereby reinforce the same.

4,224,962

CHANGE VALVE

Willy Orszullok, Altena, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 16, 1978, Ser. No. 934,175

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739196

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—465 **5 Claims**

3. A diverter valve comprising:

a casing defining a valve chamber;

first and second discharge outlets;

first and second outlet ports communicating with said cham-

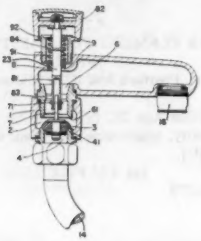
ber and respectively communicating with said first and second discharge outlets;

valve means disposed within said chamber and movable over a predetermined distance between first and second positions for closing and first outlet port in said first position and for closing said second outlet port in said second position;

actuating means movable from an intermediate position to first and second actuating positions;

means for automatically returning said actuating means to said intermediate position from said first and second actuating positions;

means for coupling said valve means and said actuating means, said coupling means comprising a recess, first and second limiting surfaces spaced apart by at least said pre-



determined distance, and a member extending into said recess, said member carrying an engaging member adapted for engaging said first and second limiting surfaces;

said valve means comprising one of said extending member or said recess and first and second limiting surfaces and said actuating means comprising the other of said extending member or said recess and first and second limiting surfaces;

said coupling means being adapted such that when said actuating means is moved to said first or second actuating positions, said valve means is carried respectively to said first or second positions, and to permit independent movement of said actuating means relative to said valve means when said actuating means is in said intermediate position.

4,224,963

FLOW-CONTROL VALVE

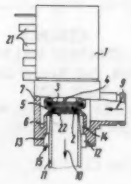
Kurt Stähle, Neuhausen-Steinegg, Fed. Rep. of Germany, assignor to Concordia Fluidtechnik GmbH, Fed. Rep. of Germany

Filed Mar. 27, 1978, Ser. No. 890,309

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1977, 2717840

Int. Cl.³ F16K *19/00*

U.S. Cl. 137—897 **19 Claims**



1. Flow control valve for liquids, such as water or the like heated to near the boiling point; comprising:

a sealing body,

a valve seat which cooperates with the sealing body to form a throttling point,

and ventilating aperture means opening into the flow of liquid through said valve at a position downstream of the throttling point, said ventilating aperture means being disposed adjacent the throttling point and being configured to prevent cavitation at the throttling point,

wherein the valve seat is formed on a nozzle which is configured to have an increasing flow cross-sectional area downstream of the throttling point, and wherein the ventilating aperture means open into said nozzle at locations outside of the projection of the throttle point cross-section such that said liquid does not impinge directly on the ventilating aperture means.

4,224,964

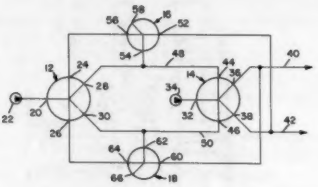
BINARY FLUIDIC COUNTER

Donald W. Chapin, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jan. 26, 1978, Ser. No. 872,691

Int. Cl.³ F15C *1/12*

U.S. Cl. 137—821 **1 Claim**



1. In combination:

a fluid pulse supply;

a continuous fluid supply;

director means for producing output pulses, said director means having a supply port connected to said fluid pulse supply, first and second input ports, and first and second output ports;

memory means for producing one of two outputs, each output having a frequency one-half the frequency of said fluid pulse supply, said memory means having a supply port connected to said continuous fluid supply, first and second input ports directly connected to said first and second output ports of said director means, and first and second output ports;

first feedback means for shifting said fluid pulse input to one of said first and second outputs of said director means, said first feedback means having a supply port connected to said second output port of said memory means, an input port connected between said first output of said director means and said first input of said memory means, a first vented output port, and a second output port connected to said first input port of said director means, said first feedback means responsive to the pressure condition within said input port thereof for operating in first and second states connecting said supply port of the first feedback means respectively with said second output thereof and said first vented output port thereof;

second feedback means for shifting said fluid pulse input to one of said first and second outputs of said director means, said second feedback means having a supply port connected to said first output port of said memory means, an input port connected between said second output of said director means and said second input of said memory means, a first vented output port and a second output port connected to said second input port of said director means, said second feedback means responsive to the pressure condition within said input port thereof for operating in first and second states connecting said supply port

of the second feedback means respectively with said second output thereof and said first vented output thereof; and

said first and second feedback means being operably arranged relative to said director means and said memory means whereby said first and second output ports of said director means are respectively in continuous, direct communication with said first and second input ports of said memory means at all times regardless of the operating states of said first and second feedback means.

4,224,965

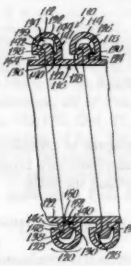
INTERLOCKING STRIP

Ronald Suchor, McHenry, Ill., assignor to Omni Plastic Products, Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 925,361, Jul. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 893,322, Apr. 3, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,756

Int. Cl.³ F16L *11/04*

U.S. Cl. 138—154 **7 Claims**



1. A flexible hose of a self-supporting material formed by helical revolutions of an interlocking strip comprising:

a strip of self-supporting material having:

a wall lying in a plane parallel to the axis of the hose and having side edges thereon,

tongue means integrally formed on one side edge of said wall and extending outwardly substantially perpendicular to said wall, said tongue means including a shank portion secured to said wall and extending perpendicular thereto, a head portion secured to said shank portion and extending perpendicular to said wall, said head portion defining a pair of offset overhangs extending from opposite sides of said shank, each of said overhangs lying in a separate plane substantially parallel to said plane of said wall, the plane of one of said overhangs being spaced farther from said wall than the plane of the other of said overhangs;

a bulbous receptacle integrally formed on the other side edge of said wall and defining an internal cavity having an inner surface with an opening in the receptacle directed toward the plane of said side wall for receiving the shank portion of said tongue means, a pair of offset shoulders in said bulbous receptacle spanning said opening from opposite sides thereof, each of said shoulders lying in a separate plane substantially parallel to said plane of said wall, the plane of one of said shoulders being spaced farther from said wall than the plane of the other of said shoulders and providing offset spaced shoulders for engaging said offset spaced overhangs on said head portion of the tongue means when said tongue means is in said cavity; and

adhesive means in said bulbous receptacle securing said head portion and overhangs of said tongue means to the inner surface of said bulbous receptacle and to said shoulders of said receptacle.

4,224,966

CRACK ARRESTOR

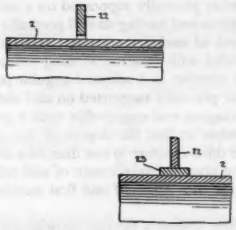
Francis S. Somerville, Calgary, Canada, assignor to Northern Border Pipeline Company, Kansas City, Mo.

Division of Ser. No. 733,882, Oct. 19, 1976, Pat. No. 4,148,127. This application Dec. 14, 1978, Ser. No. 969,477

Claims priority, application Canada, Oct. 20, 1975, 238126

Int. Cl.³ F16L *9/04*

U.S. Cl. 138—172 **8 Claims**



1. A crack arrestor for a large diameter pressurized gas pipepline formed from a plurality of tough ductile steel cylindrical pipe sections joined end to end that undergo radial expansion to an expanded state under normal operating conditions in which the gas internal to the pipeline is brought up to operating pressure, the pipe sections in the expanded state being susceptible to propagating ductile cracks driven by the internal pressure in the pipeline, said arrestor comprising an annular disc having an inside diameter that encircles and fits loosely over a pipeline section in its unexpanded state and that tightly contacts the pipeline section when an ovaling, preceding the advance of the propagating crack, propagates to the location of said disc, said disc having sufficient stiffness to prevent the ovaling in the pipeline from deforming the disc and thereby to retard the velocity of the propagating ductile crack along the pipeline sufficiently to arrest the propagating crack.

4,224,967

WARP TENSION CONTROL MECHANISM FOR LOOM

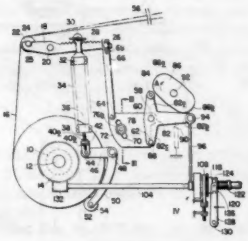
Naoji Tagawa, Kanazawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 22, 1978, Ser. No. 935,764

Claims priority, application Japan, Aug. 22, 1977, 52/99534

Int. Cl.² D03D *49/06*

U.S. Cl. 139—108 **11 Claims**



1. A warp tension control mechanism for a loom having a warp yarn beam on which warp yarns are wound in a roll form, comprising:

a swingable elongate member having guide means over which the warp yarns fed from said beam pass, said swingable elongate member being swingable about a fulcrum thereof in accordance with the degree of tensions applied to said warp yarns fed from said beam;

biasing means for biasing said swingable elongate member to swing in a direction to apply via said guide means tensions to said warp yarns;

a first member having at one end an elongate slot, a pin extending through said slot fixed to said swingable elongate member at a location opposite to said guide means with respect to said fulcrum spacedly so that the swingable movement of said swingable elongate member in said direction beyond a given degree brings said pin into contact with an end of said elongate slot to move said first member in one direction;

a second member pivotally supported on a stationary member of said loom and having an end pivotally connected to the other end of said first member, said second member being provided with position holding means for holding said second member in a selected angular position;

a third member pivotally supported on said stationary member and having an end engageable with a portion of said second member so that the degree of the pivotal movement of said third member in one direction depends on the degree of the pivotal displacement of said second member induced by the movement of said first member in said one direction;

a fourth member having a portion periodically engageable with a portion of said third member under rotation thereof to cause swinging movements of said third member;

converting means for converting said swinging movements of said third member to a rotational movement of said beam in a direction to feed said warp yarns therefrom such that the rotation speed of said beam depends on the degree of the swinging movements of said third member; and

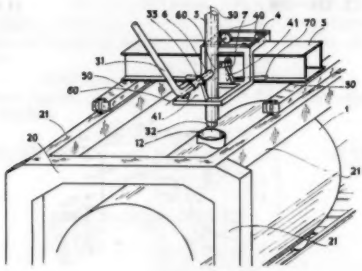
tension reducing means for permitting said biasing means to produce reduced biasing force for said swingable elongate member in accordance with the reduction of the outside diameter of the body of the wound warp yarns on said beam so that the tensions applied to said warp yarns are kept within a predetermined limited range throughout the weaving operation of the loom.

4,224,968

TANK FILLING INSTALLATIONS

Stephane Bosser, Le Plessis Bouchard, and Pierre Heitz, Puteaux, both of France, assignors to Compagnie d'Etudes et de Realisations de Cybernetique Industrielle, Fontenay-sous-Bois, France

Filed Dec. 8, 1978, Ser. No. 967,732
Int. Cl.³ B67C 3/34
U.S. Cl. 141—284 **9 Claims**



1. A tank-filling installation comprising:

a frame to be arranged over a track along which tanks will move one after the other;

a bearing slide;

a duct for insertion in an orifice in a tank by moving said duct along its axis; said orifice being capable of having an axis inclined with respect to the vertical;

means mounting said duct on said slide for pivotal movement about an axis substantially parallel to the longitudinal direction of said track;

means mounting said slide on said frame for movement relative thereto in said longitudinal direction of said track and in a transverse direction for positioning said duct above the filling orifice of a tank; and

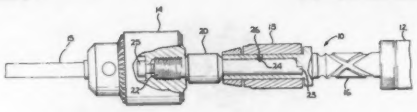
means for rotating said duct about said pivot axis so as to incline said duct with respect to the vertical at the same time as, and as a function of, the transverse motion thereof, said rotating means producing correlated pivotal and transverse movement of said duct so as to align said axis of said duct with the axis of the filling orifice of the tank.

4,224,969

UNIVERSAL CHUCK ADAPTOR

Jac A. Plessner, 7842 Clearfield Ave., Panorama City, Calif. 91402

Filed Jun. 14, 1979, Ser. No. 48,600
Int. Cl.³ B25B 17/00
U.S. Cl. 145—53 **1 Claim**



1. A universal chuck adaptor in combination with a yankee screwdriver in order to mechanically couple a drill chuck to the yankee screwdriver which includes:

a. a handle;

b. a ratchet mechanism which is mechanically coupled to the handle;

c. a release mechanism which is mechanically coupled to the ratchet mechanism, said universal chuck adaptor comprising:

a. an integral member which has a cylindrical portion at its center, a right-handed, externally threaded, cylindrical portion at one end with a left-handed, internally threaded bore and a truncated cylindrical portion with a notch at the other end, whereby said truncated cylindrical portion is slideably received within the release mechanism and secured thereby and whereby the drill chuck is threadedly coupled to said right-handed, externally threaded cylindrical portion; and

b. a left-handed threaded screw securely couples the drill chuck to said universal chuck adaptor through the left-handed, internally threaded bore.

4,224,970

COLLAPSIBLE RECEPTACLE FOR FLOWABLE MATERIALS

Robert R. Williamson, and Norwin C. Derby, both of Dallas, Tex., assignors to Super Sack Manufacturing Corporation, Dallas, Tex.

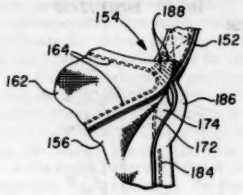
Continuation-in-part of Ser. No. 813,634, Jul. 7, 1977, Pat. No. 4,143,796. This application Oct. 18, 1978, Ser. No. 952,335
Int. Cl.³ B65D 29/00, 29/02
U.S. Cl. 150—1 **11 Claims**

10. In a collapsible receptacle of the type having a plurality of longitudinally extending lift straps secured to a container in circumferentially spaced relationship, the container including an upstanding side panel with a separate top panel having an opening and peripherally secured across the upper end of the side panel and having a closed bottom, the improvement which comprises:

each of said lift straps being secured to the top and side panels at the upper end of said container; and

each of said lift straps being secured along the lower portion

thereof to the side panel up to a point located a predetermined distance below the upper end of the container such that an unsecured portion of each strap is provided adjacent to the point of connection of said strap to said top panel so that said straps are operable to distribute lifting



forces along said side panel, and to transmit oblique forces applied through said upper portions of said straps in a direction oblique to said side panel into said top panel to prevent said side straps from being torn away from the receptacle by the oblique forces.

4,224,971

DOWEL OR ANCHORING MEANS

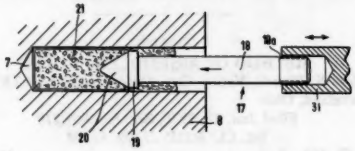
Dieter Müller, Berger Str. 3a, 8136 Percha; Wilhelm Endlich, Mimosenstr. 7, 8 München 45, and Siegfried Kugler, Haus Nr. 12, 8041 Fahrenzhausen, all of Fed. Rep. of Germany

Division of Ser. No. 736,152, Oct. 27, 1978, Pat. No. 4,100,954, which is a continuation of Ser. No. 583,000, Jun. 2, 1975, abandoned, which is a continuation of Ser. No. 205,158, Dec. 6, 1971, abandoned. This application May 5, 1978, Ser. No. 903,095

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1970, 2059852

Int. Cl.[2] F16B *13/00*

U.S. Cl. 151—41.7 **3 Claims**



1. An arrangement for anchoring objects to support structures, especially support structures of light-weight building materials, comprising an anchoring rod insertable with clearance into an anchoring hole in a support structure, said anchoring rod comprising an elongated stem and a flange of a diameter only slightly smaller than that of said anchoring hole at a leading end of said stem; and means for securing said anchoring rod in said anchoring hole consisting of a plug of a hardenable substance in said anchoring hole in the path of said anchoring rod and having two intermixed components at least one of which is encapsulated in microcapsules, so that the substance is squeezed by said anchoring rod during insertion thereof into said anchoring hole with concomitant rupturing of the microcapsules and resulting formation of an intimate mixture of said components which are displaced by said anchoring rod during advance thereof into the clearance between the anchoring rod and the anchoring hole to subsequently harden therein, said plug being a hollow cylindrical plug having an outer diameter substantially equal to that of said anchoring hole and an inner diameter smaller than that of said flange, said plug comprising a flexible porous carrier sheet coated at least on one side therof with said hardenable substance and wound in several layers to form said hollow cylinder, said anchoring rod being secured in said anchoring hole exclusively by said substance after the latter has hardened.

4,224,972

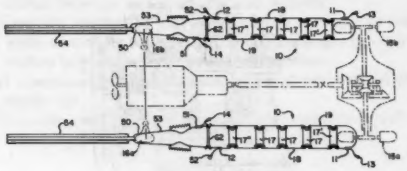
COMBINATION WINCH AND TRACTION INTENSIFIER FOR RUBBER TIRED VEHICLES

Thorvald G. Granryd, 825 N. Sheridan, Lake Forest, Ill. 60045

Filed Jan. 30, 1978, Ser. No. 873,374

Int. Cl.[2] B06C *27/06*

U.S. Cl. 152—213 A **10 Claims**



1. A device for extricating an immobilized rubber tired vehicle having a power driven drive wheel and a non-driven wheel comprising

traction intensifying means for operative connection to a drive wheel of a vehicle for increasing the tractive force between the vehicle drive wheel and the surface upon which said drive wheel is supported,

said traction intensifying means including resilient traction bar formed from cross section of tire casing segments with an outer surface-engaging contour in the configuration the same as the outer transverse cross sectional contour of the vehicle drive wheel with each end thereof mutually exclusively secured to one of a pair of longitudinally extending parallel coupling members for positioning each one of said resilient traction bars in spaced transversly extending relation between said coupling members,

one of said pair of longitudinally extending parallel coupling members having buckle means at each end thereof and the other of said pair having the ends thereof free such that adjacent ends of said coupling members may be operatively connected to a vehicle driving wheel when said ends are interconnected,

anchoring means operatively connected to a non-driven wheel of the vehicle and coupled to said traction intensifying means for providing a fixed anchor point for said traction intensifying means, relative to the non-driven vehicle wheel,

said anchoring means including coupling means for coupling said traction intensifying means thereto, and

spring means operatively connected to said coupling means for controlling the tension therein upon operative engagement of said traction intensifying means coupling members with the vehicle driven wheel.

4,224,973

DRIVE MECHANISM, PARTICULARLY FOR MOVING AND TURNING THE SLATS OF A BLIND

Walter Hugin, Am Scherbenrain 13, D-7841 Kleinkems, Fed. Rep. of Germany

Filed Dec. 5, 1977, Ser. No. 857,746

Int. Cl.[2] E06B *9/38*

U.S. Cl. 160—178 R **20 Claims**

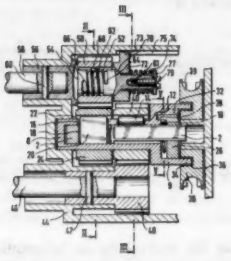
1. Drive mechanism, particularly for moving and turning the slats of a blind comprising:

(a) a rotatable drive element capable of being rotated in either direction.

(b) a first shaft for operating as a screw drive for shifting the slats of a blind along a guide rail.

(c) a second reversing shaft for turning slots jointly,

(d) means for drivingly connecting said rotatable drive element to said first shaft including a freewheel comprising:
(i) a helical groove on said first shaft,
(ii) a hollow casing surrounding and spaced from said helical groove and having an axial groove in the interior surface thereof,
(iii) a rolling body partially in each said groove, and
(iv) means for drivingly connecting said hollow casing and said rotatable drive element, and



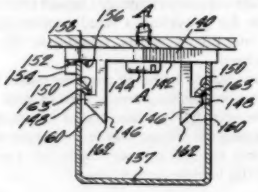
(e) means for drivingly connecting said rotatable drive element to said second shaft comprising:
(i) a drive tube,
(ii) a driven casing surrounding said tube, and
(iii) means for drivingly coupling said driven casing to said drive tube comprising radially movable blocking elements engaging in one position thereof said drive tube and said casing and in another portion thereof only one of said tube and casing.

4,224,974

MOUNTING BRACKET FOR VENETIAN BLIND ASSEMBLY

James M. Anderson, and Samuel J. Anderson, both of Swarthmore, Pa., assignors to International Blind Company, Chester, Pa.

Division of Ser. No. 798,649, May 19, 1977, Pat. No. 4,177,853. This application Dec. 13, 1978, Ser. No. 969,093
Int. Cl.³ E06B 9/38
U.S. Cl. 160—178 R **7 Claims**



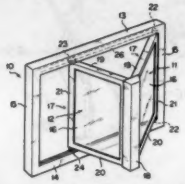
1. A bracket for mounting the head rail of a venetian blind to a support surface of a window opening said head rail being in the form of channel member of U-shaped cross section comprising a base member pivotally mounted to a support surface, a pair of flexible, resilient legs depending from the base member having tangs at their terminal ends engageable with locking beads running the length of the head rail channel and rotatable to a position wherein said tangs release said channel member, the outer terminal portions of said tangs being spaced apart a distance greater than the spacing between said locking beads whereby upon assembly of said bracket means, said legs flex inwardly toward one another upon engagement of said tangs with said beads and then flex outwardly to engage said tangs under said beads.

4,224,975

SWIVEL ROLLER ASSEMBLY FOR FOLDING DOORS

Takeo Uehara, Uozu, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,802
Claims priority, application Japan, Dec. 29, 1977, 52-176286
Int. Cl.³ E05D 15/26
U.S. Cl. 160—206 **6 Claims**



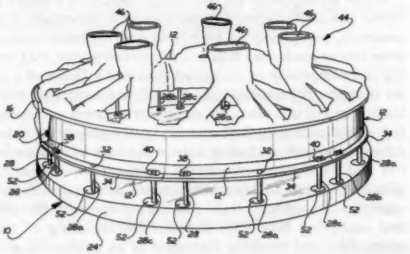
1. In a folding door having a plurality of foldable door sections mounted within a doorframe, one of the door sections including a stile which is movable in the plane of the doorframe during the opening and closing of the door, a swivel roller assembly adapted to be mounted at the bottom end of the stile for permitting same both to move along a rail on the sill of the doorframe and to swivel relative to the sill rail, comprising:
(a) a hollow outer member adapted to be immovably received in the bottom end of the stile;
(b) a bearing washer within the outer member;
(c) a hollow inner member rotatably received in the outer member and adapted to be mounted astraddle the sill rail of the doorframe, the outer member bearing on the inner member via the bearing washer for swivelling motion relative to same; and
(d) a roller rotatably mounted within the inner member for rolling engagement with the sill rail, said inner member having a portion projecting downwardly of the outer member with a pair of downwardly open slots therein in alignment with the roller and receiving the sill rail.

4,224,976

METHOD OF ASSEMBLING MOLDS

William S. Blazek, Valley City, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Jan. 13, 1978, Ser. No. 869,219
Int. Cl.³ B22D 23/00, 33/04
U.S. Cl. 164—4 **31 Claims**



1. A method of assembling a plurality of molds to cast articles, said method comprising the steps of providing an adjustable mold fixture which is adapted to receive a plurality of mold wall sections, providing mold wall sections, placing a first plurality of the mold wall sections having predetermined mold cavity wall forming dimensions in the mold fixture to locate the first plurality of mold wall sections in a first spatial relationship relative to each other, interconnecting the first

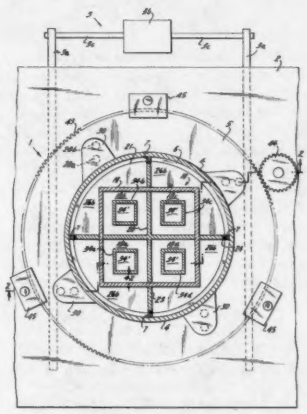
plurality of mold wall sections while they are in the mold fixture, removing the first plurality of mold wall sections from the mold fixture, casting a first article using the first plurality of mold wall sections, measuring the first article to determine the extent to which its dimensions deviate from predetermined dimensions, placing a second plurality of mold wall sections having the same predetermined mold cavity wall forming dimensions as corresponding first mold wall sections in the mold fixture to locate the second plurality of mold wall sections relative to each other, compensating for deviations in the dimensions of the first article from the predetermined dimensions by adjusting the mold fixture to locate the second plurality of mold sections relative to each other in a second spatial relationship which is different than the first spatial relationship, interconnecting the second plurality of mold wall sections while they are in the mold fixture and after adjusting the mold fixture to compensate for deviations in the dimensions of the first article, removing the second plurality of mold wall sections from the mold fixture, and casting a second article having at least slightly different dimensions than the first article by using the second plurality of mold wall sections.

4,224,977

MOLD ASSEMBLY AND METHOD FOR CONTINUOUS CASTING

Michael Cygler, Colonia; Joseph L. Cuomo, Oakland, and Michael Poran, Westwood, all of N.J., assignors to Concast Incorporated, Montvale, N.J.

Filed Feb. 6, 1979, Ser. No. 9,845
Int. Cl.³ B22D *11/04, 11/00*
U.S. Cl. 164—82 **20 Claims**



1. A continuous casting installation comprising:
(a) a mold assembly having a plurality of open-ended molds, said mold assembly being arranged so that one of said molds is in a casting position and another of said molds is in a standby position, and said mold assembly including a member which is commohn to all of said molds and cooperates with each of said molds to define a mold cooling passage therewith, said molds being movable to and from said casting position while cooperating with said member to define said cooling passages thereby permitting rapid substitution of one mold for another;
(b) a support for said mold assembly;
(c) means for supplying coolant to and discharging coolant from said cooling passages; and
(d) means for moving said molds to and from said casting position.

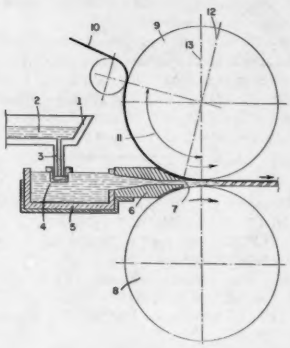
16. A continuous casting method comprising the steps of:
(a) forming a continuously cast strand by continuously introducing molten metal into one of a plurality of open-ended molds having a common member which cooperates with each of said molds to define a cooling passage therewith, said one mold being positioned at a casting location;
(b) cooling said one mold during the forming step by supplying coolant to the respective cooling passage;
(c) terminating the introduction of molten metal into said one mold;
(d) withdrawing the trailing end of said strand from said one mold;
(e) moving said one mold away from said casting location while continuing to define said cooling passages by cooperation between said molds and said member;
(f) moving another of said molds to said casting location while continuing to define said cooling passages by cooperation between said molds and said member;
(g) continuously admitting molten metal into said other mold; and
(h) cooling said other mold during the admitting step by supplying coolant to the respective cooling passage.

4,224,978

METHOD OF MANUFACTURING COMPOSITE STRIPS BY CONTINUOUS CASTING

Dominique Klein, Ham, France, assignor to Manufacture Metallurgique de Tournus, Tournus, France

Filed Jun. 4, 1979, Ser. No. 45,085
Claims priority, application France, Jun. 19, 1978, 78 18926
Int. Cl.³ B22D *11/06, 19/00*
U.S. Cl. 164—86 **7 Claims**



1. A method of forming a composite material formed of a strip which is between 0.1 and 1 mm thick of a metal having a mechanical strength and melting point which are substantially higher than those of aluminum, the strip being plated on at least one face of a strip of the aluminum which is between 1.5 and 20 mm thick by continuous casting of the aluminum between spaced parallel rolls, the aluminum being discharged between the rolls by means of a nozzle having a flattened cross-section and a width equal to the strip to be cast which is placed in the vicinity of the rolls, the metal strip to be plated onto the aluminum strip being interposed between the roll or rolls and the aluminum, comprising the steps of:
contacting the strip of plating metal with one of the rolls over an arc of contact which is greater than 30° and includes the portion thereof between a generatrix closest to the end of the nozzle and a generatrix situated in the plane of the roll axes;
providing a clearance between the nozzle and the roll entraining the plating metal of a dimension smaller than the thickness of the plating strip increased by 1 mm; and,
providing a casting speed such that the elongation of the

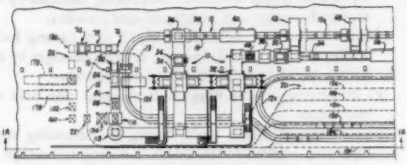
plating metal strip is greater than 1% and less than that of the aluminum once the aluminum has solidified.

4,224,979

AUTOMATIC FOUNDRY SYSTEM

George C. Rosin, South Euclid, and Robert E. Kulon, Willowick, both of Ohio, assignors to McNeil Corporation, Akron, Ohio

Filed Oct. 31, 1977, Ser. No. 846,694
Int. Cl.³ B22D *5/00, 33/00, 47/00*
U.S. Cl. 164—130 18 Claims



8. In a method of making castings, the steps comprising:

assembling sand molds, including sand cakes and surrounding flasks, for receiving molten metal to form metal castings,

providing containers for carrying a sand cake and casting after removal of the flask,

conveying sand molds along a path a portion of which is used for filling molds and a subsequent portion of which, considered in the direction of mold travel, is used for primary cooling of the castings,

bringing empty containers to a transfer location adjacent the subsequent portion of the path,

removing the sand cake and casting from the flask and transferring the sand cake and casting directly into an empty container at the transfer location while continuously engaging top, bottom and side surfaces of the sand cake, thereby maintaining the integrity if the sand cake, and

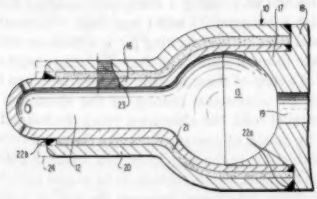
further cooling the casting within the sand cake.

4,224,980

THERMALLY STRESSED HEAT-CONDUCTING STRUCTURAL PART OR CORRESPONDING STRUCTURE PART CROSS SECTION

Helmut Buchner, Wendlingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1978, Ser. No. 876,064
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705353
Int. Cl.³ G05D *23/00*
U.S. Cl. 165—32 10 Claims



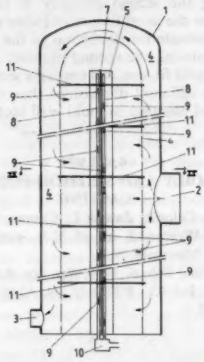
1. A thermally stressed heat-conducting structural part in which a temperature gradient forms when the heat conducting structural part is heated, the structural part including a pair of spaced walls, means for joining the spaced walls together so as to form a gas tight interstice between the pair of walls, characterized in that the walls are formed of a hydrogen-diffusion-impervious material, the interstice is completely filled with a metal hydride so that the pair of walls and metal hydride are connected in a heat-conducting manner, and in that the metal hydride completely filling the interstice is disposed substantially transversely to the temperature gradient.

4,224,981

FEED-WATER HEATER FOR STEAM POWER PLANTS

Rudolf Datz, Baden, and Helena Riegger-Dreher, Zurich, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Jun. 23, 1978, Ser. No. 918,510
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820736
Int. Cl.³ F28B *9/10;* F28D *1/06, 7/06;* F28F *9/22*
U.S. Cl. 165—114 9 Claims



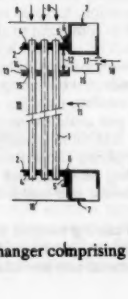
1. A feed-water heater for steam power plants comprising a housing having a steam inlet and a condensate outlet, a plurality of heat exchanger tubes in said housing between said inlet and said outlet, said heat exchanger tubes being arranged in the shape of a U having a low temperature section and a high temperature section and the two legs of the U having a width, partition means in said housing extending substantially the entire width of the legs of the U between said low temperature section and said high temperature section for preventing the direct flow of steam from one section to the other, and deaerating means on opposite sides of said partition means for withdrawing gas from the regions adjacent each of said opposite sides of said partition means.

4,224,982

TUBULAR HEAT EXCHANGER

Willi Frei, Höchsterstrasse 11b, CH-9016 St. Gallen, Switzerland

Filed Nov. 8, 1978, Ser. No. 958,671
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1977, 2754197
Int. Cl.³ F28F *9/16*
U.S. Cl. 165—134 R 4 Claims



1. A tubular heat exchanger comprising a housing, upper and

lower perforated sheet metal plates mounted on the housing, a vertical stack of tubes surrounded by a chamber within the housing, said tubes being mounted adjacent their ends to the upper and lower plates through the perforations, a layer of heat-and acid-sensitive casting resin sealing the tube ends to the upper plate, inlet and outlet means on the housing for flowing a first fluid medium in a vertical direction through the stack of tubes, inlet and outlet means on the housing for flowing a second fluid medium through the chamber surrounding the tube stack, said second fluid medium being at an elevated temperature and including constituents that may cause corrosion of the casting resin layer, and means for preventing thermal and corrosive damage to the casting resin layer, said damage-preventing means comprising a further plate-like member located between the upper and lower metal plates and spaced from the said upper metal plate containing the casting resin to form a space therebetween, said further plate-like member and the said space functioning to separate the second medium from the casting resin and protect the latter from thermal and corrosive damage, inlet and outlet means on the housing for the said space between the upper metal plate and the further plate-like member, and means to supply a third fluid medium to the space inlet means for flowing the third medium through and cooling the said space, said third fluid medium being at a higher pressure than the pressure within the chamber, said further plate-like member comprising two plates with a layer of acid- and heat-resistant material sandwiched therebetween.

4,224,983

HEAT EXCHANGE APPARATUS FOR A REACTOR

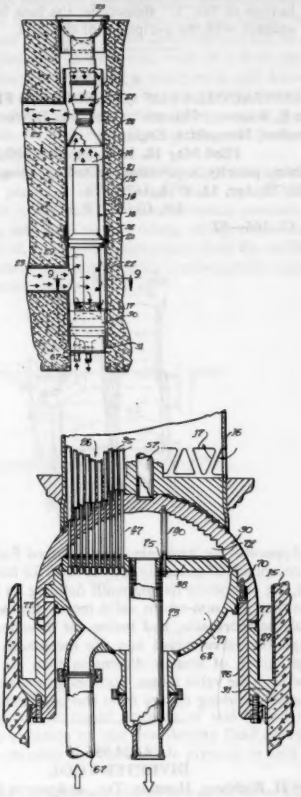
Glenn C. Thurston; John D. McDaniels, Jr., both of Solana Beach, and Paul R. Gertsch, San Diego, all of Calif., assignors to General Atomic Company, San Diego, Calif.

Filed Feb. 2, 1978, Ser. No. 874,382

Int. Cl.[2] F28F *9/02, 13/00*

U.S. Cl. 165—158 **7 Claims**

1. A heat exchange apparatus for transferring heat from a reactor gas coolant to a secondary fluid medium, comprising: an elongated vertically extending housing; an elongated vertical extending tubular shroud supported within said housing in spaced relation thereto, said shroud having a gas entry substantially around the periphery at its lower end and a gas exit at its upper end; means dividing the annular space between said shroud and said housing into an upper and a lower region; an inlet for reactor coolant communicating with said lower region and being spaced above said gas entry to said shroud to thereby suppress natural convection during non-operating standby conditions of said apparatus; an outlet for reactor coolant communicating with said upper region; a plurality of vertically extending, spaced apart bayonet tube assemblies supported within said shroud; means for passing said secondary fluid medium through said tube assemblies; and means for causing reactor coolant to flow in through said inlet, upwardly



through said shroud and out through said outlet during emergency conditions of said reactor.

4,224,984

FINNED TUBE USEFUL FOR HEAT EXCHANGERS

Etsutaro Miyata, Yamatokoriyama, and Toshiya Tonomura, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 19, 1975, Ser. No. 559,780

Claims priority, application Japan, Mar. 20, 1974, 49-32237; Apr. 30, 1974, 49-49878[U]; Feb. 4, 1975, 50-15043

Int. Cl.[2] F28D *7/02*

U.S. Cl. 165—184 **8 Claims**

1. A finned tube useful for heat exchangers comprising:
a hollow tube;
a "U" shaped fin made of a heat-radiating material and helically wound around said hollow tube;

a plurality of radially extending corrugated crimps formed on the fin portion of the "U" shaped fin; and

a base formed by flattening the crimps provided on the bottom of the "U" shaped fin, the base being forced into contact with the periphery of the tube.

4,224,985

CONTAINMENT OF PRESSURIZED FLUID JETS

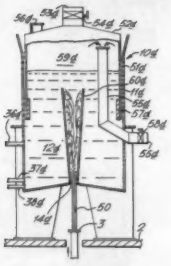
John E. Rapson, "Chinook", Nash Rd., Dibden Purliev, Southampton, Hampshire, England

Filed May 18, 1978, Ser. No. 907,237

Claims priority, application United Kingdom, May 21, 1977, 21522/77; Apr. 12, 1978, 14290/78

Int. Cl.[2] E21B *35/00*

U.S. Cl. 166—57 **18 Claims**



1. Apparatus for containing a pressurized fluid jet, comprising a receptacle of generally conical form for holding a body of liquid, the receptacle having walls defining an included angle of less then 25°, non-return valve means disposed at the small end of the receptacle, and means for directing the fluid jet through the valve means into the receptacle, having a discharge outlet, of smaller dimension than the valve means, spaced from the valve means, vortices generated in the body of the liquid absorbing energy from and containing the fluid jet.

4,224,986

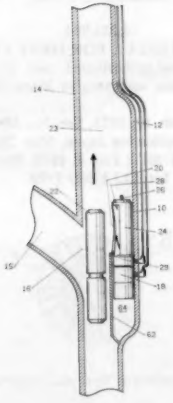
DIVERTER TOOL

Robert H. Rothberg, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 11, 1978, Ser. No. 968,533

Int. Cl.[2] E21B *23/00*

U.S. Cl. 166—117.5 **13 Claims**



1. An apparatus for diverting pump-down tools along one of two conduits at a wye-section of a pipeline, said apparatus comprises:

a base housing having an upper and lower end and adapted to be sealably supported within a side-pocket mandrel of the pipeline adjacent the wye-section;

a flapper connected to said housing and adapted for pivotal movement across the first conduit of the wye-section; and

means for pivoting said flapper between a first position wherein said flapper is retracted adjacent said housing leaving the first conduit open permitting passage of the pump-down tool therethrough and a second position wherein said flapper is pivoted across the width of the first conduit so as to deflect the pump-down tool into the second conduit of the wye-section upon striking the flapper, said pivoting means is supported within said housing such that said housing and said flapper are capable of being removed in an integral manner from the side-pocket mandrel for servicing.

4,224,987

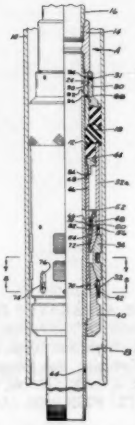
WELL TOOL

Richard G. Allen, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Feb. 13, 1978, Ser. No. 877,121

Int. Cl.[2] E21B *33/128, 33/129*

U.S. Cl. 166—120 **43 Claims**



30. A well tool for sealing against a surrounding tubular conduit comprising:

a mandrel;

seal means carried externally of said mandrel and radially extendable with respect thereto by axial compression from an unset position to a set position for sealingly engaging said tubular conduit;

first actuator means comprising first piston means operatively associated with said seal means and movable relative to said mandrel in a first longitudinal direction to axially compress and thereby radially extend said seal means from said unset position to said set position;

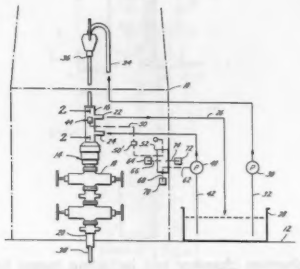
and cylinder means for said first actuator means surrounding said first piston means and at least partially externally overlying said seal means in said unset position.

4,224,988

DEVICE FOR AND METHOD OF SENSING CONDITIONS IN A WELL BORE

Joseph T. Gibson, and Gerald L. Duhon, both of New Iberia, La., assignors to A. C. Co., New Iberia, La.

Filed Jul. 3, 1978, Ser. No. 921,317
Int. Cl.² E21B 47/04; G01N 9/24
U.S. Cl. 166—250 **25 Claims**



1. Means for continuously monitoring drilling fluids in a well bore adjacent the drilling fluid return-line comprising:

a continuous radiative source mounted adjacent the return line to emit a radioactive signal across the well bore;

means for detecting said radioactive signal being positioned opposite said source and wherein the magnitude of any detected signals is inversely related to the density of the drilling fluids;

electrical conduit means mounted with said detecting means for electrically transmitting any detected signals indicating the density of such drilling fluids;

metering means mounted with said electrical means for indicating the presence or absence of drilling fluids, and if such drilling fluids are present, for indicating the density of such drilling fluids; and

a pump mounted with said electrical means for adding drilling fluids to the well bore, said pump being activated when the absence of drilling fluids at the surface of the well bore is indicated by said electrical signal.

10. A method of sensing and correcting a condition of drilling fluid downhole in a well bore, comprising the steps of:

emitting a radioactive signal from a radioactive source positioned at the surface of the well bore across the well bore and a drilling pipe positioned therein;

detecting said radioactive signal with apparatus positioned opposite the radioactive source;

measuring the intensity and frequency of occurrence of each detected signal with electrical apparatus;

providing an electrical signal from said electrical apparatus indicating the presence or absence of drilling fluids at the surface of the well bore; and

adding drilling fluid to said well bore in response to electrical detection of a predetermined absence of drilling fluid at the surface of said well bore.

4,224,989

METHOD OF DYNAMICALLY KILLING A WELL BLOWOUT

Elmo M. Blount, Irving, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

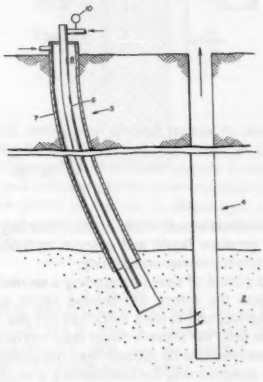
Filed Oct. 30, 1978, Ser. No. 955,738
Int. Cl.² E21B 35/00, 47/06
U.S. Cl. 166—250 **3 Claims**

1. In a method of killing a blowout in a well penetrating a subterranean gas-producing formation by the introduction of fluid into said blowout well through a relief well including a tubing string and casing defining an annulus and penetrating said formation and in fluid communication with said blowout well, the steps comprising:

(a) introducing into said relief well a fluid having a low density which produces a hydrostatic pressure component which is less than the static pressure of said formation,

(b) pumping said low density fluid down the annulus of said relief well and into said blowout well at a flow rate to produce a frictional pressure component in said blowout well whereby the sum of said frictional pressure component and said hydrostatic pressure component is greater than the static formation pressure but less than the formation fracturing pressure,

(c) introducing into said tubing string a fluid having a density which produces a hydrostatic head in said tubing string which is less than the static formation pressure and maintaining said fluid in said tubing string under conditions such that the pressure differential from the wellhead to the bottom of said tubing string is substantially equal to said hydrostatic head,



(d) measuring the wellhead pressure of said tubing string during the injection of said low density fluid down said annulus to monitor the bottomhole pressure in said relief well,

(e) continuing the injection of said first fluid as set forth in step (b) down said relief well and into said blowout well to block the flow of gas from said formation into said blowout well,

(f) introducing into said relief well a fluid having a sufficiently high density to produce a hydrostatic pressure which is greater than the static formation pressure, and

(g) pumping said high density fluid down the annulus of said relief well and into said blowout well at a flow rate which is less than the maximum flow rate of step (b) to produce a frictional pressure loss in said blowout well whereby the sum of said frictional pressure loss and said hydrostatic pressure for said high density fluid is less than the formation fracturing pressure.

4,224,990

METHOD FOR FLATTENING THE COMBUSTION ZONE IN AN IN SITU OIL SHALE RETORT BY THE ADDITION OF FUEL

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Jan. 19, 1979, Ser. No. 4,938
Int. Cl.² E21B 43/24
U.S. Cl. 166—256 **48 Claims**

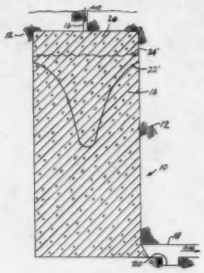
1. In a method for recovering liquid and gaseous hydrocarbon products from an in situ oil shale retort containing a fragmented permeable mass of particles containing oil shale, the

fragmented mass having a gas flow path between a retort inlet and a retort outlet, the method comprising the steps of:

establishing a primary combustion zone in a portion of the fragmented permeable mass near the retort inlet;

for a first period of time introducing a first retort inlet mixture comprising an oxygen supplying gas to the fragmented permeable mass through the retort inlet for sustaining the primary combustion zone; and

withdrawing an off gas from the fragmented mass through a retort outlet whereby gas flow from the retort inlet toward the retort outlet advances the primary combustion zone through the fragmented permeable mass and advances a retorting zone through the fragmented permeable mass on the advancing side of the primary combustion zone whereby oil shale in the retorting zone is retorted to produce liquid and gaseous hydrocarbon products, the improvement comprising;



for a second period of time introducing a second retort inlet mixture into the retort, the second retort inlet mixture comprising fuel and at least sufficient oxygen for combustion of the fuel, the second retort inlet mixture having an ignition temperature no greater than the primary combustion zone temperature, for establishing a secondary combustion zone at a first location in the fragmented mass upstream of the primary combustion zone; and

during the second period of time moving the secondary combustion zone to a second location in the fragmented mass.

4,224,991

METHOD AND APPARATUS FOR EXTRACTING CRUDE OIL FROM PREVIOUSLY TAPPED DEPOSITS

Armin Sowa, Ottobrunn, and German Munding, Bad Friedrichshall, both of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

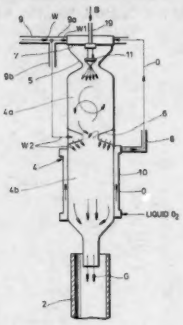
Filed Feb. 28, 1979, Ser. No. 16,072

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808690

Int. Cl.³ E21B *36/02, 43/24*

U.S. Cl. 166—272 **7 Claims**

1. A device for extracting crude oil from previously tapped oil deposits having at least one feed bore extending thereto and at least one extraction bore extending therefrom, comprising, means defining a combustion chamber having at least one reaction chamber portion, an evaporation chamber portion and at least one constricted nozzle portion separating the reaction chamber and the evaporation chamber portion, means for introducing and burning a fuel and a chemical oxygen and/or an oxygen carrier in said reaction chamber portion to form high temperature combustion gases, means to introduce water into said reaction chamber to form superheated steam in the high temperature combustion gases and means for discharging the steam with the force of the gases from the reaction chamber through the feed bore and into the deposits to cause the oil therein to become less viscous and to flow out of the extraction bore, said means for introducing and burning a fuel and a chemical oxygen and/or an oxygen carrier comprising a separate means for introducing the fuel centrally into said combustion chamber and for introducing said oxygen tangentially into said combustion chamber and including means for directing the oxygen in liquid form along the walls of said evaporation chamber to cool said evaporation chamber and then directing it into said reaction chamber for burning therein.



4,224,992

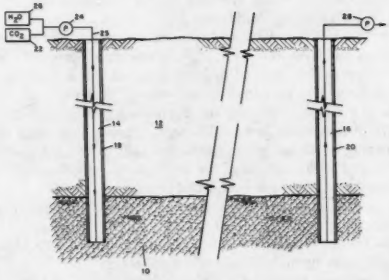
METHOD FOR ENHANCED OIL RECOVERY

Joseph R. Comberiati; Charles D. Locke, both of Morgantown, W. Va., and Krishna I. Kamath, Chicago, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 30, 1979, Ser. No. 34,804

Int. Cl.³ E21B *43/20, 43/22*

U.S. Cl. 166—273 **7 Claims**



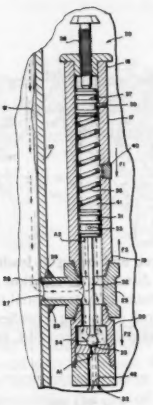
1. An improvement in the method of recovering oil from subterranean oil-bearing strata by carbon dioxide flooding where the oil-bearing strata is at a temperature less than the critical temperature of carbon dioxide and at an injection pressure greater than the saturated vapor pressure of carbon dioxide at said temperature, comprising the steps of injecting liquid carbon dioxide into a first well penetrating the oil-bearing strata for displacing the oil from the oil-bearing strata to a second well penetrating the oil-bearing strata at a location in the oil-bearing strata separated from the first well, and thereafter and prior to the displacement of the oil from the oil-bearing strata by the carbon dioxide reducing the pore pressure in substantially all of the oil-bearing strata intermediate the first and second wells to a value less than the saturated vapor pressure of carbon dioxide at said temperature to vaporize carbon dioxide in said strata at locations spaced from the first well for facilitating the mixing of the carbon dioxide with the oil in the oil-bearing strata at said locations.

4,224,993

DEWAXING VALVE FOR USE IN OIL WELLS

Leonard Huckaby, P.O. Box 152, Wayne, Okla. 73095

Filed Sep. 13, 1979, Ser. No. 75,094
Int. Cl.[3] E21B *34/10, 37/06*
U.S. Cl. 166—325 **7 Claims**



1. A dewaxing valve for use with a production tube in a production tubing string in an oil well casing wherein sucker rods extend through the interior of the production tubing string for operating a down hole pump to bring oil in the lower portion of the well annulus defined between the casing and production tubing up through the production tubing to the well surface, said dewaxing valve including, in combination:

(a) a valve seat housing having a lower opening communicating with said annulus and an upper opening for communication with the interior of said production tube;

(b) a valve seat in said housing between said lower and upper openings, said valve seat facing said upper opening;

(c) a ball seated on said valve seat between said valve seat and upper opening so as to be on the upstream side of any fluid flow from the interior of said production tube through said valve to said annulus and,

(d) means in said valve responsive to a fluid pressure in said production tube exceeding a predetermined value to lift said ball from said seat, whereby hot dewaxing fluid can be forced down said production tubing string at a pressure exceeding said predetermined pressure to open said valve and pass the dewaxing fluid to the well annulus.

4,224,994

SINGLE CONTROL FOR GAS ACTUATED FIRE EXTINGUISHERS

Melvin N. Tone; Larry J. Zimmer, and James W. Jewett, all of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 21, 1979, Ser. No. 50,788
Int. Cl.[3] A62C *35/18*
U.S. Cl. 169—9 **3 Claims**

1. An apparatus comprising:

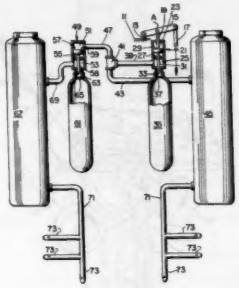
(a) a plurality of gas cartridges, each of said gas cartridges containing a pressure influenced gas and a puncturable diaphragm to permit release of said gas;

(b) a plurality of extinguishing tanks;

(c) a plurality of cylinder-pistons, each of said cylinder-pistons slidably containing a piston having a piston head located in a first chamber of said cylinder-piston and a piston rod fixably mounted to said piston head and extending into a second chamber of said cylinder-piston, each of said cylinder-pistons being fixably mounted to an associated gas cartridge such that slidable movement of said piston can cause said piston rod to puncture said diaphragm of said associated gas cartridge;

(d) first means for actuating said piston of one of said cylinder-pistons to puncture said diaphragm of said associated gas cartridge;

(e) second means to conduct a portion of said released gas from said associated gas cartridge to at least one of said



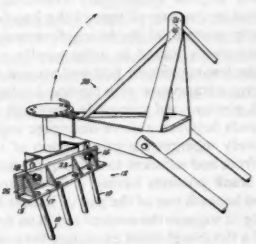
extinguishing tanks, said second means to also connect said cylinder-pistons such that a portion of the gas released by said one of said cylinder-pistons is conducted to another of said cylinder-pistons to be received in a manner to move the piston to rupture its diaphragm to cause its associated gas cartridge to release gas to another extinguishing tank.

4,224,995

DEVICE FOR REMOVING PALMETTO BUSHES

Richard C. Alberger, 151 E. 57th St., Hialeah, Fla. 33013

Filed Aug. 21, 1978, Ser. No. 935,545
Int. Cl.[3] A01D *31/00;* A01B *39/12*
U.S. Cl. 171—105 **10 Claims**



1. A digging device adapted for attachment to a 3 point hitch of a tractor for use in removing palmetto bushes from the earth comprising;

an angle iron support frame having a horizontal member with an upper horizontal surface and a vertical member with a forwardly faciang vertical surface, said vertical surface approximately at right angles to said horizontal surface and collectively defining a forward frame face,

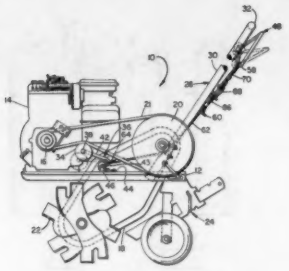
the frame face being reinforced by a plurality of generally right angle gusset members each connected at the vertical and horizontal surfaces on the foward face,

a plurality of generally cylindrical, downwardly and forwardly extending teeth being of a uniform diameter and cross section having a first end fixedly connected to the horizontal member at predetermined widely spaced intervals and a second truncated terminal end, and means for adapting the frame for use with a 3 point tractor-type hitch.

4,224,996
CONTROL MECHANISM FOR A WALK-BEHIND ROTARY TILLER

Dale R. Dobberpuhl, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Dec. 7, 1978, Ser. No. 967,501
Int. Cl.[2] A01B 33/02, 33/08
U.S. Cl. 172—42 5 Claims



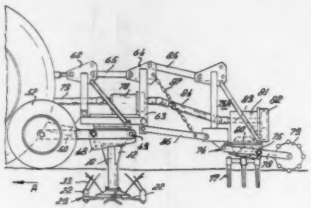
1. In a walk-behind powered implement including a frame, an engine mounted on the frame, a working tool mounted on the frame, a drive train connecting the engine to the tool and including a drive belt encircling drive and driven pulleys and engaged by an idler pulley pivotally mounted on the frame for movement between drive-effecting and drive-disengaging positions; a handle having a pair of transversely extending legs fixed to the frame at their forward ends and joined at their rearward ends by a transverse grip portion, the improvement of a control mechanism for the idler pulley, comprising; said idler pulley being pivotally supported on the frame by means of a first rod having parallel, spaced transversely extending first and second ends; said pulley being journaled on said first end and said second end being pivotally received in the frame; an intermediate generally Z-shaped crank portion joining said first and second ends; a drive control rod having first and second axially aligned transversely extending ends respectively received in the pair of legs of the handle adjacent the transverse grip portion of the latter; first and second crank portions respectively joined in orthogonally extending relationship to the last-mentioned first and second ends; the control rod having a transverse grip portion joining the first and second crank portions and swingable therewith about the first and second ends between a drive-disengage and engage position respectively wherein the grip portion of the rod is disposed away from and adjacent to the grip portion of the hand; one of said crank portions having a downwardly extending bend disposed beneath one of the pair of handle legs such as to engage the leg to support the control rod in its drive-disengage position, and a flexible element extending between and having its opposite ends connected to the Z-shaped crank portion of the first rod and the bend of the control rod.

4,224,997
SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Oct. 27, 1977, Ser. No. 845,975
Claims priority, application Netherlands, Oct. 29, 1976, 7611989; Oct. 29, 1976, 7611990
Int. Cl.[3] A01B 33/06
U.S. Cl. 172—59 12 Claims

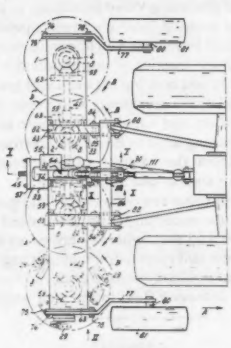
1. A soil cultivating implement comprising a frame and at least one soil working member rotatably mounted on said frame, said member comprising an elongated, substantially vertical shaft and a tool carrier adjacent the lower end of the shaft, the outer periphery of said carrier extending in a generally horizontal plane and driving means connected to rotate said carrier about an axis defined by said shaft, a part of said driving means being mounted adjacent the upper end of the shaft, tool means connected to said carrier by an arm and said arm comprising a support for said tool means, said tool means being fastened to said support intermediate opposite ends of the tools means, said tool means having a lower free end and an upper free end positioned below and above said arm, respectively, said lower free end being in leading position with respect to the normal direction of rotation of said member, said tool means being substantially tangential to the axis of rotation of said carrier, said tool including a resilient guide that extends rearwardly beyond said upper free end, said guide comprising rods.



4,224,998
SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, Zug, Switzerland

Filed Dec. 12, 1977, Ser. No. 859,849
Claims priority, application Netherlands, Dec. 13, 1976, 7613805
Int. Cl.[2] A01B 33/06
U.S. Cl. 172—59 18 Claims

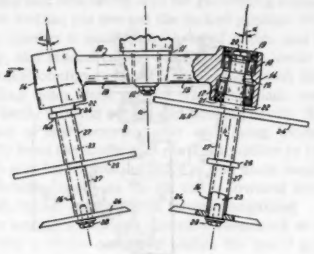


1. A soil cultivating implement comprising a frame and a row of soil working members rotatably mounted on said frame, said members being rotatable about upwardly extending axes defined by respective shafts and driving means connected to rotate said members, each member including support means on a respective shaft and tines depending downwardly from said support means, each tine having a lower soil working portion and an upper fastening portion, said soil working portion being interconnected to said support means through a resilient coil and said coil being located in advance of said fastening portion relative to the normal direction of rotation of the corresponding soil working member, a plane perpendicular to the longitudinal axis of said coil being substantially tangential with an imaginary circular cylinder, the longitudinal axis of which coincides with the axis of rotation of said soil working member, said fastening portion being substantially straight and extending substantially tangential to an imaginary circle centered on the axis of rotation of said soil working member.

4,224,999
SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Feb. 24, 1978, Ser. No. 881,142
Claims priority, application Netherlands, Mar. 2, 1977, 7702206
Int. Cl.³ A01B 33/06
U.S. Cl. 172—59 6 Claims



1. A rotary harrow implement comprising a frame and a transverse row of soil working members journalled along the length of an elongated portion of said frame, driving means connected to rotate said members about respective upwardly extending shafts which define the axes of rotation of said members, each member comprising two soil working tools that are diametrically positioned relative to its axis of rotation, the tools on neighboring members being positioned to work overlapping paths, each member comprising substantially horizontal support arm means with opposite end portions and said end portions each mounting freely rotatable tools that depend from said arm means, said tools each comprising superposed elongated flat soil working elements that project outwardly and substantially straight with respect to the axis of tool rotation, said elements extending substantially parallel to a plane perpendicular to said tool axis, the ends of the uppermost flat element being positioned to describe a path adjacent the axis of rotation of a neighboring soil working member, said tool axes being downwardly convergent towards one another and towards the axis of rotation of the respective soil working member.

4,225,000
DOWN HOLE DRILLING MOTOR WITH PRESSURE BALANCED BEARING SEALS

William C. Maurer, Houston, Tex., assignor to Maurer Engineering Inc., Houston, Tex.

Filed Sep. 11, 1978, Ser. No. 941,275
Int. Cl.² E21B 3/12
U.S. Cl. 175—107 5 Claims

1. A down hole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby comprising:

tubular housing means,

rotary shaft means supported in said housing means and extending therefrom for supporting a drill bit,

motor means in said housing means for actuation by flow of drilling fluid therethrough and operable to rotate said shaft means,

bearing means in said housing means supporting said rotary shaft means,

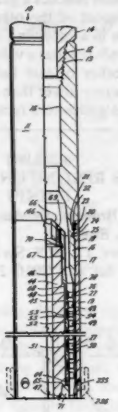
a first rotary seal positioned between said shaft means and said housing means below said bearing means and subjected to drilling fluid pressure outside said housing means,

a second rotary seal positioned between said shaft means and said housing means above said bearing means,

lubricant fluid filling the space around said bearing means between said seals,

a first passageway opening from the inlet side of said motor means through said motor means and said rotary shaft means to a point outside said housing means adjacent to the drill bit,

a second passageway opening from a point adjacent to the outlet end of said motor means through the wall of said housing means to a point outside said said wall, and in fluid communication with said second rotary seal to subject the same to the pressure of drilling fluid outside said housing, and

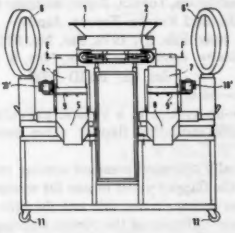


said first and said second passageways being connected in parallel and of a relative size such that the pressure drop through said motor means is substantially equal to the pressure drop along said first passageway, whereby the pressure applied to said first and second rotary seals is balanced.

4,225,001
BAGGING MACHINE WITH TWO WEIGHING SCALES AND TWO REVERSIBLE CONVEYORS

Gerd Gillenkirch, 110 Schmachtendorfer Strasse 110, D 4200 Oberhausen-Sterkrade-Nord, Fed. Rep. of Germany

Filed May 10, 1978, Ser. No. 904,432
Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720901
Int. Cl.² G01G 13/08
U.S. Cl. 177—90 4 Claims



1. A machine for the filling of containers with goods, said machine comprising a hopper for holding a supply of the goods, a pair of spaced goods receiving means for receiving and for delivering the goods to separate containers, each receiving means being connected to weighing means for weighing the goods received in each said receiving means, a pair of

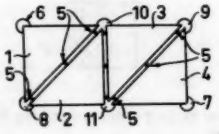
conveyor belts disposed to convey goods from said hopper to one of said receiving means when they move in one direction and to the other receiving means when they move in the opposite direction, reversible drive means connected to said belts for driving each belt independently of the other, and means responsive to said weighing means and connected to said drive means for reversing the movement of one of said belts when the weight of the goods in a receiving means to which said one belt is delivering goods reaches a predetermined value and for reversing the movement of the other of said belts when the weight of the goods in a receiving means to which the other belt is delivering goods reaches a value high than said predetermined value, said other of said belts delivering goods to a receiving means at a rate lower than the rate at which said one of said belts delivers goods to a receiving means.

4,225,002

WEIGH-BRIDGE RESTING ON LOAD MEASURING POINTS

Arne O. Söderholm, Bromma, Sweden, assignor to S.E.G. Resistor AB, Vallingby, Sweden

Filed Nov. 17, 1978, Ser. No. 964,067
Int. Cl.³ G01G *21/12*
U.S. Cl. 177—255 **4 Claims**



1. Weigh-bridge of horizontal platform type for an electromechanical, hydraulic or pneumatic weighing machine having more than three points of support, characterized in that the platform is composed of at least two parts in a common plane being mutually joined in a symmetrical way by means of flexurally weak but laterally stiff joint elements so that the platform is torsionally weak along its horizontal axes and so that the load of an object on the platform will be transferred from one part of the platform to an adjacent part via the joint elements, that load receiving support points comprised of load transducers, are located at the ends of adjacent sides of platform parts, and that all said support points are so located that each platform part is supported by three points of support.

4,225,003

IDLE-UP SYSTEM DURING A POWER STEERING OPERATION OF A VEHICLE

Takayuki Yoshimura, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 27, 1978, Ser. No. 881,897
Claims priority, application Japan, Nov. 8, 1977, 52/133115
Int. Cl.² B62D *5/06*
U.S. Cl. 180—54 G **1 Claim**

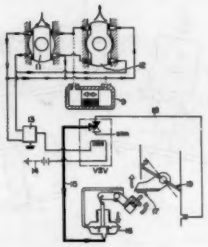
1. An idle-up system in a vehicle provided with a power steering means including flapper valve means, said system comprising:

an electrically operated pressure sensing means fluidly coupled to the flapper valve means for sensing a difference of pressures acting on one side and the other side of a piston in a power cylinder of the power steering means during a steering operation;

an electromagnetic vacuum switching valve responsive to said pressure sensing means and having a vacuum opening communicating with a vacuum port of a carburetor of the engine through an intake vacuum line and an atmosphere opening and adapted to be, actuated by said pressure sensing means when said pressure sensing means detects a pressure difference across the piston to effect a switching operation between said vacuum opening and said atmosphere opening;

a source of electric power electrically connected to said electromagnetic vacuum switching valve;

a diaphragm-type actuating mechanism fluidly coupled to said vacuum switching valve and comprising a diaphragm chamber communicating with said vacuum opening of said vacuum switching valve via a vacuum line and means



moveable with said diaphragm in response to the motion thereof; and

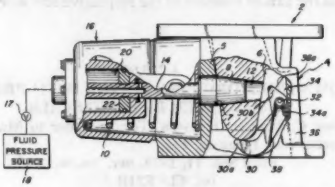
interlocking means arranged between said means moveable with said diaphragm and a throttle valve of the carburetor, said interlocking means being operable to open said throttle valve by a predetermined extent in response to the vacuum communicating operation of said electromagnetic vacuum switching valve.

4,225,004

TILT-CAB LOCKING DEVICE INCLUDING INTERLOCK MEANS

Eugene C. Lipshield, Moberly, Mo., assignor to Orscheln Lever Sales Co., Moberly, Mo.

Filed Jan. 9, 1979, Ser. No. 1,581
Int. Cl.³ B62D *33/06*
U.S. Cl. 180—89.14 **4 Claims**



1. A locking assembly for locking the tilt cab of a vehicle to the vehicle chassis frame, comprising

(a) a housing adapted for connection with the chassis frame, the upper portion of said housing containing a cavity of generally rectangular cross-section configuration including downwardly converging opposed pairs of side walls;

(b) a blade member for connection with the tilt cab, said blade member being arranged to extend in seated relation within said housing cavity when the tilt cab is in the lowered position relative to the chassis frame, said blade member having a rectangular cross-sectional configuration and including tapered opposed pairs of outer surfaces which correspond generally with the cavity wall surfaces, said blade member containing a generally horizontally-extending locking opening;

(c) a horizontal locking pin mounted for axial displacement within an opening contained in a first cavity wall of said housing for axial displacement between locked and un-

locked positions relative to said blade member locking opening;

(d) first spring means normally biasing said locking pin toward its locked position;

(e) means for retracting said locking pin against the biasing force of said spring means toward its unlocked position; and

(f) interlock means connected with a second cavity wall opposite said first cavity wall for preventing displacement of said locking pin toward the locked position when said blade member is incompletely seated within said housing cavity, said second cavity wall including a lower portion in parallel contiguous seated engagement with the corresponding outer blade surface when the blade member is completely inserted within said housing cavity, the upper portion of said second cavity wall being inclined outwardly from the lower wall portion to define an increased target area for facilitating entry of said blade member into said housing cavity as the tilt cab is lowered toward the chassis frame, said interlock means comprising

(1) an interlock member pivotally connected at one end within a recess contained within the lower portion of said second cavity wall for pivotal movement about a horizontal pivot axis between downwardly extending retracted and horizontally extending extended positions relative to said second cavity wall, respectively; and

(2) second spring means biasing said interlock member toward said extended position, said interlock member, when in the extended position, extending across said cavity opposite said locking pin for preventing the axial displacement thereof toward said locked position, said interlock member being pivoted by said blade member toward the retracted position only when said blade member is completely seated within the housing cavity.

4,225,005

SETUP OF METER INDICATION DISPLAY IN AUTOMOBILE

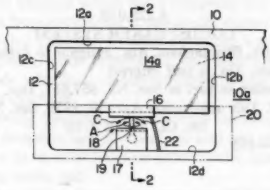
Shigeru Okabayashi, Kamakura, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 2, 1979, Ser. No. 16,915

Claims priority, application Japan, Apr. 24, 1978, 53/54297[U]

Int. Cl.³ B60K *37/02*

U.S. Cl. 180—90 **7 Claims**



1. A setup of instrumental display in an automobile, comprising:

an instrument board which is recessed in a substantially vertical surface facing a seat so as to provide a recessed room;

a meter indication display panel disposed in said room, said display panel having a planer display element, which exhibits an optical change in response to an electrical signal, interposed between two transparent plates; and

a support means for supporting said display panel so as to face to said seat and allowing said display panel to be swivelled and tilted,

surfaces of said instrument board defining said room and located above and around said display panel being dark colored.

4,225,006

VEHICLE CONTROL SPEED SENSING METHOD AND APPARATUS

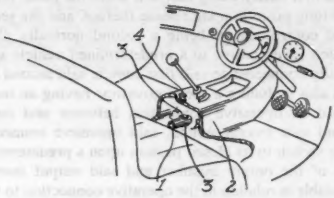
Alan B. Murray, 12 Forest Dr., Forest Hills, Kloof, Natal Province, South Africa

Division of Ser. No. 707,342, Jul. 21, 1976, Pat. No. 4,174,765. This application Jan. 8, 1979, Ser. No. 1,419

Claims priority, application South Africa, Jul. 23, 1975, 75/4748

Int. Cl.² B60K *31/00*

U.S. Cl. 180—179 **3 Claims**



1. A method of generating electrical signals proportional to the road speed of a motor vehicle comprising attaching a pair of bar magnets to the vehicle drive shaft in a symmetrical relationship to extend along the shaft, said magnets being spaced from the motor vehicle body, locating a sensing coil entirely within the motor vehicle body on the floor near the magnets, sensing variations in the magnetic field generated by rotation of the drive shaft in the coil to provide electrical signals and amplifying the signals through a high gain amplifier.

4,225,007

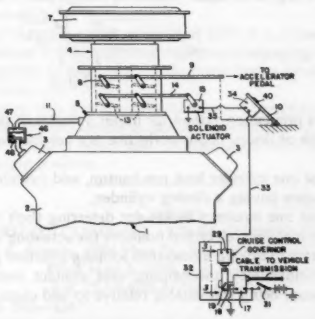
SPEED-RESPONSIVE DEVICE FOR INTERNAL COMBUSTION ENGINE WITH PIVOTED PLATE CLAPPER TYPE CHECK VALVE BETWEEN CRANKCASE AND INTAKE MANIFOLD

Fred W. Voges, 234 Northwoods Rd. Flower Hill, Manhasset, N.Y. 11031

Filed Apr. 7, 1977, Ser. No. 785,590

Int. Cl.³ B60K *27/08*

U.S. Cl. 180—284 **3 Claims**



1. In an internal combustion engine for driving a vehicle, said engine having a crank case, an intake manifold, a carburetor, a throttle valve means controlling air-fuel mixture flow from the carburetor into the intake manifold and a throttle valve linkage means connecting the throttle valve means and accelerator pedal, a cut-off valve means located between the throttle valve means and the intake manifold to control the flow of air-fuel mixture to the intake manifold, said cut-off valve means being normally in an open position, valve actuat-

ing means comprising an electro-magnetic device connected to said cut-off valve means to move it to an open or closed position, and two serially-arranged control means to energize said valve actuating means to move said cut-off valve means to a position to close communication between said throttle control means and intake manifold, the first of said control means being a first normally closed switch which is responsive to the accelerator pedal position, said first switch being located adjacent to the accelerator pedal and being provided with means to be effected by the operator's foot pressure on the pedal upon movement of the pedal in vehicle driving direction to open the switch, said first switch being reclosed when the pedal returns to engine idling position upon release thereof, and the second of the said control means being a second normally closed switch which is responsive to a predetermined vehicle speed and is serially connected to said first switch, said second control means also including a speed governor having an output member and an operative connection between said output member and said second switch, said operative connection moving the switch to its closed positon upon a predetermined movement of the output member and said output member being adjustable in relation to the operative connection to vary the predetermined movement of the output member.

4,225,008

THEFT-PROOF SYSTEM FOR MOTOR VEHICLES

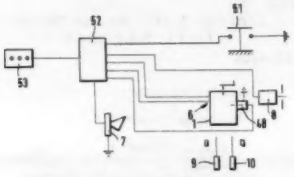
Hans Colell, Schwieberdingen, and Richard Hetmann, Tamm, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1978, Ser. No. 874,150

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1977, 2704478

Int. Cl.[2] B60R *25/00*

U.S. Cl. 180—287 **18 Claims**



1. A theft-prevention system for motor vehicles of the type having a lock on doors, hoods or the like of a vehicle, comprising:

(a) at least one cylinder lock mechanism, said cylinder lock mechanism having a closing cylinder;

(b) at least one auxiliary means for deterring theft of said vehicle including electrical contacts for actuating same;

(c) a contact switching mechanism forming a further part of the cylinder lock mechanism, said contact switching mechanism being translatable relative to said closing cylinder;

(d) first key means engageable with said cylinder lock mechanism for actuating and deactuating only said closing cylinder;

(e) second key means engageable with said cylinder lock mechanism for actuating and deactuating both said closing cylinder and said auxiliary means; and

(f) a locking mechanism engageable with said cylinder lock when auxiliary means is actuated for preventing operation of said cylinder lock by said first key means.

4,225,009

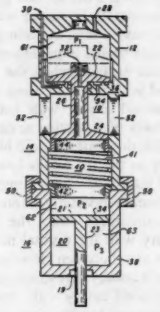
INTERNAL AIR RELEASE CONTROL APPARATUS AIR GUN

Earnest R. Harrison, Plano, and Roy C. Johnston, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 4, 1979, Ser. No. 26,975

Int. Cl.[2] G01V *1/14*

U.S. Cl. 181—120 **15 Claims**



1. A seismic energy source apparatus having a housing defining at least one exhaust port and an inner chamber for storing compressed air and containing a shuttle having first and second pistons disposed generally parallel to each other at opposite ends of a shaft with an orifice therethrough, having a first air supply means for providing compressed air to the chamber and having a second air supply means controlled by acutating means for supplying air pressure under the first piston to cause the shuttle to move upwardly, comprising:

(a) seating means disposed within the chamber against which the first piston seats;

(b) resilient seating means disposed within the chamber against which the second piston seats at one end; and

(c) a valve positioned within the chamber having a valve head and a valve stem, the head seating against the resilient means at the other end when actuated by the shuttle moving upwardly, and the stem passing through an aperture in the bottom of the housing.

4,225,010

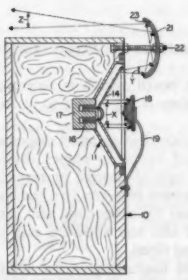
LOUDSPEAKER SYSTEM

Lloyd B. Smith, Birmingham, Ala., assignor to Arthur P. Bagby, Birmingham, Ala., a part interest

Continuation-in-part of Ser. No. 857,651, Dec. 5, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 30,998

Int. Cl.[3] H05K *5/00*

U.S. Cl. 181—155 **8 Claims**



1. A loudspeaker system comprising:

(a) an enclosure defining a sound chamber having a front wall with a sound emitting opening therein,

(b) an outwardly and forwardly flaring loudspeaker cone mounted within said enclosure adjacent said sound emitting opening with the innermost portion of said loudspeaker cone emitting the most distorted sound and the outermost portion emitting the least distorted sound, and

(c) at least one reflector mounted outwardly of said enclosure and forwardly of an outer portion of the loudspeaker cone with the outermost edge of said reflector being located outwardly of and beyond the outer edge of the cone diaphragm and outwardly of and beyond said enclosure as measured outwardly in a radial direction from a line extending forwardly along the axis of said loudspeaker cone with the innermost edge of said reflector being located at least 15 percent of the radial distance measured outwardly from the outer edge of the loudspeaker voice coil to the outer edge of the cone diaphragm and with the sound being reflected by said reflector being directed outwardly of said enclosure at least 90° from a line extending forwardly along the axis of the loudspeaker cone.

4,225,011

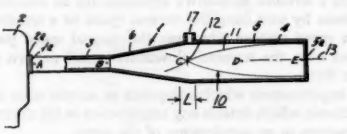
METHOD AND DEVICE FOR SILENCING THE EXHAUST NOISE OF INTERNAL COMBUSTION ENGINES

Moriyuki Taguchi, 675-44, Aritama-Nishimachi, Hamamatsu-shi, Shizuoka-ken, Japan

Division of Ser. No. 810,618, Jun. 27, 1977, Pat. No. 4,149,611, which is a continuation of Ser. No. 580,540, May 23, 1975. This application Nov. 27, 1978, Ser. No. 963,764

Int. Cl.³ F01N *1/00*

U.S. Cl. 181—269 **3 Claims**



1. The method of silencing noise in the exhaust stream from an internal combustion engine, having a noise component intended to be silenced which has a relatively low frequency, and also high frequency noise components, comprising:

a. in a silencing chamber, forming a standing wave from said low frequency noise component, said standing wave having a node with least amplitude along its axis within said silencing chamber;

b. withdrawing the exhaust stream from the silencing chamber in a direction lateral relative to said axis of said standing wave at an axial location substantially axially aligned with said node; and

c. thereafter passing the exhaust stream withdrawn from the silencing chamber through a muffler adapted to muffle the high frequency components.

4,225,012

SAFETY CLAMP DEVICE AND APPARATUS UTILIZING SAME

Durward J. Hindle, Redwing, Minn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 28,045

Int. Cl.² E05G *3/10*; F16G *11/00*

U.S. Cl. 182—112 **27 Claims**

1. A safety clamp device adapted to be slidably mounted on an upright safety cable and adapted to be connected to a movable platform raised and lowered by means of a hoist cable, said safety device comprising:

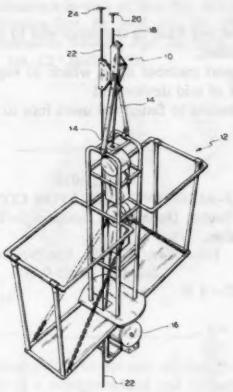
a body member having a cable receiving cradle adapted to receive said safety cable;

a lever arm shiftably mounted on said body member for movement about an axis transverse to the slidable movement of said body member relative to said safety cable, said lever arm shiftable between a safety cable engaging position and a safety cable release position;

safety cable engaging means for engaging said safety cable when said lever arm is in said engaging position;

an elongate member pivotally attached to said lever arm, said elongate member carrying a first roller at one end and a second roller at the other end, said first and second rollers being adapted to engage said hoist cable;

a control arm pivotally attached at one end to said body member, carrying a third roller at the other end, and pivotally attached to said elongate member intermediate



said first pivot means and said third roller, said first roller being adapted to engage said hoist cable and said control arm;

said hoist cable being threaded over said first, second, and third rollers;

said control arm operating to maintain said elongate member in a first upright position to, in turn, maintain said lever arm in said release position in response to said cable being tensioned;

said elongate member adapted to shift to a second upright position to urge said lever arm to said engaging position in response to said cable having less than a predetermined tension; and

said lever arm and said control arm cooperatively acting to maintain said cradle in parallel relationship to said elongate member when said elongate member is in said first upright position.

4,225,013

UPRIGHT CLIMBING AND PLATFORM DEVICE

George A. Sample, 1956 First Pl., SW., Vero Beach, Fla. 32960

Filed May 3, 1979, Ser. No. 35,690

Int. Cl.³ A63B *27/02*; A47C *9/10*

U.S. Cl. 182—134 **7 Claims**

1. Combination climbing and platform device comprising a pair of right and left climber members each comprising

a clamping part and a platform part,

said clamping part comprising

a tubular J-shaped element fixed at its base portion to said platform part at an obtuse angle relative to the plane of said platform part,

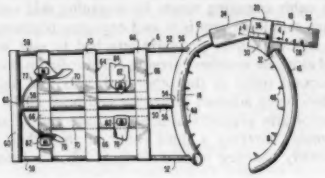
a tubular arcuate element telescopically carried on the leg portion of said J-shaped tubular element and

means to lock said arcuate element on said J-shaped ele-

ment in a C-shaped arrangement at a plurality of positions providing adjustment in size of the C-shaped arrangement,

said platform part comprising

a plurality of substantially parallel elongated members each fixed at one end to said base of said J-shaped ele-



ment and fixed at the other end to a transverse tubular member,

a support member upon which to support a foot of the user of said device and

strap means to fasten the users foot to said support member.

4,225,014

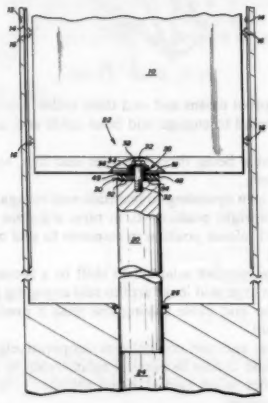
SELF-ALIGNING ELEVATOR CONNECTION

John H. Wheeler, Dallas, Tex., assignor to The Texacone Company, Dallas, Tex.

Filed Nov. 28, 1978, Ser. No. 964,154

Int. Cl.[2] B66B *9/00*

U.S. Cl. 187—1 R **13 Claims**



1. In a hydraulic elevator where a car is supported by a platform and guided by vertical rails in an elevator shaft with the car and platform raised and lowered by a hydraulic piston, apparatus for connecting the piston to the platform to support the platform and accommodate misalignment between the piston and the guide rails, said apparatus comprising in combination,

(a) a washer assembly located on the upper surface of said platform and comprising a first elastomeric disc having a central opening, a plurality of springs disposed between said elastomeric disc and said platform, and a first tubular member bonded to said elastomeric disc axially within said central opening,

(b) a cushion assembly located between said piston and said platform and comprising a second elastomeric disc with a central opening, a plurality of springs disposed on either side of said second disc intermediate said platform and said piston, and a second tubular member bonded to said second elastomeric disc within said central opening, and

(c) bolt means extending through said washer assembly, said platform and said cushion assembly, said bolt means engaging said piston to connect said platform to said piston with rigid contact being made sequentially between the head of said bolt, said first tubular member, said platform, said second tubular member and the top of said piston, said rigid contact being maintained during misalignment between the piston and the guide rails.

4,225,015

TERMINAL SLOWDOWN APPARATUS FOR ELEVATOR

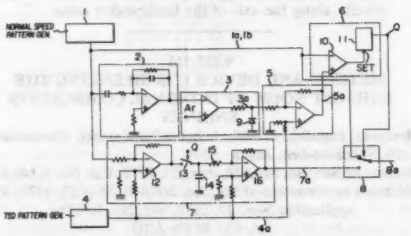
Kunio Yamada, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1978, Ser. No. 910,428

Claims priority, application Japan, May 30, 1977, 52-63003

Int. Cl.[3] B66B *1/30*

U.S. Cl. 187—29 R **6 Claims**



1. In a terminal slowdown apparatus for an elevator which functions by switching the normal speed to a terminal slowdown speed pattern whenever the normal speed pattern increases over the terminal slowdown speed pattern near the lower floor,

an improvement which comprises an acceleration detecting circuit which detects any acceleration in the normal speed pattern or an acceleration of the cage;

a relative speed pattern generator which forms a relative speed pattern depending upon the output of the acceleration detecting circuit and the position of the cage and

a comparator which is actuated when the normal speed pattern or the cage speed becomes higher than the relative speed pattern; whereby the normal speed pattern is switched to the terminal slowdown speed pattern by the operation of the comparator.

4,225,016

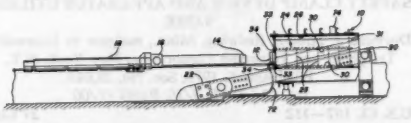
HYDRAULIC DECELERATOR WITH SEGMENTED CYLINDER

John P. Kilian, Ineirlik, Turkey, and John A. Brown, Kettering, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,382

Int. Cl.[3] F16F *57/00*

U.S. Cl. 188—38 **4 Claims**



1. In a hydraulic decelerator system for use in the deceleration of a test sled having a ram piston which breaks a membrane over the entrance of a waterbrake cylinder and enters

the cylinder to force water through a plurality of orifices in the waterbrake cylinder to thereby decelerate the test sled, a waterbrake cylinder assembly, comprising: a water reservoir; a thrust absorbing system secured to said reservoir; a plurality of cylinder segments within said reservoir; means for holding said segments in close engagement with the adjacent segments; means for forming a plurality of orifices in a predetermined pattern in the walls of each segment; means for forming a transition orifice at the junction of adjoining segments; a frangible membrane; means, including a piston guide assembly for securing said membrane to the forward end of the waterbrake cylinder; said reservoir being filled with water to a predetermined level above said cylinder with the water also filling said cylinder.

4,225,017

DISC BRAKE AND SUPPORT STRUCTURE THEREFOR

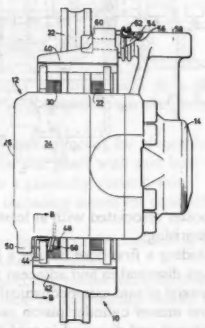
Lutz E. A. Op den Camp, Koblenz, Fed. Rep. of Germany, assignor to Girling Limited, Birmingham, England

Filed Jan. 13, 1977, Ser. No. 759,121

Claims priority, application United Kingdom, Jan. 17, 1976, 1865/76

Int. Cl.[2] F16D 65/02

U.S. Cl. 188—73.3 **7 Claims**



1. A disc brake comprising a disc having an axis and first and second opposite faces; a torque taking member fixed relative to said disc and provided with slide surfaces; first and second friction elements provided with slide surfaces and disposed adjacent to said first and second opposite faces respectively, at least said first friction element comprising a backing plate and a block of friction material carried by said backing plate, said backing plate having an extension projecting beyond the periphery of the disc and said block of said friction material, said slide surfaces of said first and second friction elements cooperating with said slide surfaces of said torque taking member such that said first and second friction elements are slidably carried and at least said first friction element is restrained against movement radially of said axis of said disc by said torque taking member; a caliper member arranged to straddle said disc and to move said first and second friction elements against said first and second opposite faces respectively for braking, said caliper member having front and rear limbs disposed adjacent said first and second friction elements respectively, a crown portion joining said limbs, and first and second sides, a slidable assembly mounting said caliper member on said torque taking member, said assembly comprising only a single pin extending directly between said caliper and torque-taking members, releasable connection means securing said single pin to one of said torque and caliper members on said first side of said caliper member, and an opening in the other of said torque and caliper members slidably receiving said pin, said pin being spaced from said friction elements, and inter-engaging projection and recess means on said first friction element and said caliper member on said second side of said caliper member and comprising a recess in a portion of said first friction element defined by an open ended slot in the extension of said backing plate with the open end of said slot extending generally towards the axis of said pin, and a projection carried by said caliper member and engaged within said slot so as to hold said caliper member against pivotal movement about the axis of said pin, said projection having play along said slot and being free of direct engagement with said torque-taking member, said projection having an axial length such that it extends over at least a major portion of the block of friction material in its unworn condition.

4,225,018

SENSOR FOR BRAKING SYSTEMS

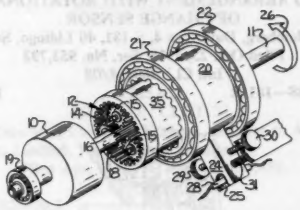
Folke I. Blomberg, Duvstigen 4, S-181, 40 Lidingo, Sweden

Continuation-in-part of Ser. No. 657,104, Feb. 11, 1976, Pat. No. 4,061,212, and a continuation-in-part of Ser. No. 847,669, Nov. 1, 1977. This application Oct. 20, 1978, Ser. No. 952,962

Claims priority, application Sweden, Apr. 24, 1978, 7804675

Int. Cl.[3] B60T 8/06

U.S. Cl. 188—181 R **31 Claims**



1. In a sensor for responding to the rate of change of changing rotational speeds of a vehicle wheel and including a flyweight coupleable for rotation in response to wheel rotation and selectively decoupleable in response to the exertion on the flyweight of a torque having a magnitude greater than a threshold magnitude due to a change in rotational speed of the wheel, control means operatively connected with the flyweight for exerting on the flyweight torques resisting decoupled rotation of the flyweight, and signalling means operatively connected with the control means and responsive to decoupled rotation of the flyweight for signalling occurrences of an excessive rate of change in changing rotational speeds of the wheel, an improvement in said control means comprising means for controlling the level of torque transmitted by said control means and operable in response to an occurrence of a rate exceeding the threshold rate for changing the level of torque from a first level to a second level and thereby for causing said signalling means to signal continuously for the interval of time during which the threshold rate is exceeded.

4,225,019

BRAKING SYSTEM SENSOR AND METHOD

Folke I. Blomberg, Duvstigen 4, S-181, 40 Lidingo, Sweden

Continuation-in-part of Ser. No. 657,104, Feb. 11, 1976, Pat. No. 4,061,212, and Ser. No. 847,669, Nov. 1, 1977. This application Oct. 20, 1978, Ser. No. 952,961

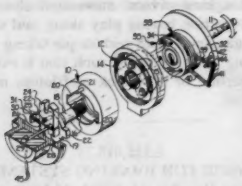
Claims priority, application Sweden, Jan. 11, 1977, 7712342; Apr. 24, 1978, 7804673

Int. Cl.[3] B60T 8/16

U.S. Cl. 188—181 R **51 Claims**

1. In a sensor for responding to the rate of change of changing rotational speeds of a vehicle wheel and including a flyweight coupleable for rotation in response to wheel rotation and selectively decoupleable in response to the exertion on the flyweight of a torque having a magnitude greater than a threshold magnitude due to a change in rotational speed of the wheel, control means operatively connected with the fly-

weight for exerting on the flyweight torques resisting decoupled rotation of the flyweight, and signalling means operatively connected with the control means and responsive to decoupled rotation of the flyweight for signalling occurrences



of an excessive rate of change in changing rotational speeds of the wheel, an improvement in said control means comprising means for exerting on said flyweight an average of a plurality of resistive torques.

4,225,020

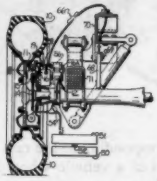
BRAKING ARRANGEMENT WITH ROTATIONAL RATE OF CHANGE SENSOR

Folke I. Blomberg, Duvstigen 4, S-181, 40 Lidingo, Sweden

Filed Oct. 23, 1978, Ser. No. 953,792

Int. Cl.[3] B60T *8/08*

U.S. Cl. 188—181 R **12 Claims**



1. In the combination of a rotating member, a brake operative for slowing the rotating member, and a sensor operatively coupled to the rotating member for signalling any occurrence of an excessive rate of retardation of the rotating member, an improvement which facilitates optimal response of said sensor comprising a variable ratio transmission coupling means operatively interposed between said sensor and said rotating member and operatively responsive to a predetermined operating condition of the rotating member for varying the sensitivity of said sensor upon variations in said condition.

4,225,021

ANTI-SQUEAL SHIM USED IN A DISC-BRAKE

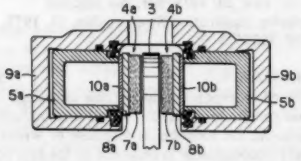
Koji Kawamura, Susono, and Hideyuki Hayashi, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 848,771, Nov. 4, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,565

Claims priority, application Japan, Jan. 10, 1977, 52-1252

Int. Cl.[3] F16D *65/00*

U.S. Cl. 188—73.5 **10 Claims**



1. An anti-squeal shim arrangement used for a disc-brake, the arrangement comprising a rotatable disc, a pair of friction pad assemblies, means for urging each of said friction pad assemblies toward said disc, and a respective shim inserted in a sandwich-like manner between each of said friction pad assemblies and said urging means, each said shim consisting solely of a respective plate of a metallic material selected from the group consisting of aluminum, aluminum-based alloys and brass, said plates being free of all coatings, and constructed and arranged to have metal surfaces in direct contact with said urging means and with respective ones of said friction pad assemblies throughout the operating life of said shims without any intervening substances.

4,225,022

BRAKE BOOSTER

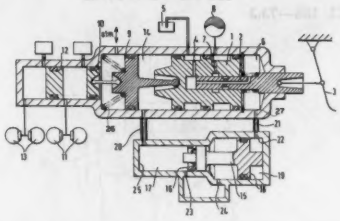
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,347

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744408

Int. Cl.[2] B60T *13/20*

U.S. Cl. 188—348 **7 Claims**



1. A brake booster associated with at least one brake circuit of a vehicle comprising:

a housing including a first bore having a longitudinal axis;

a booster piston disposed in and adjacent to one end of said first bore coaxial of said axis mechanically associated with at least a first master cylinder piston associated with said one brake circuit and disposed in said first bore adjacent the other end of said first bore coaxial of said axis, said booster piston being biased toward said one end of said first bore;

a valve device disposed internally of said booster piston, said device being connected to a brake pedal adjacent said one end of said first bore and serving to control a supply of pressure medium into a boosting chamber disposed between said one end of said bore and said booster piston;

a first pressure medium chamber disposed in said first bore between said booster piston and said first master cylinder piston;

an axially displaceable stepped piston disposed in a second bore spaced from said first bore and having a larger active surface and a smaller active surface;

a second pressure medium chamber in communication with said boosting chamber disposed in said second bore adjacent said larger active surface, said second pressure medium chamber being pressurized by said pressure medium received from said boosting chamber when said valve device supplies said pressure medium to said boosting chamber, said stepped piston being displaced to enlarge said second pressure medium chamber when said second pressure medium chamber is pressurized; and

a third pressure medium chamber in communication with said first pressure medium chamber disposed in said second bore adjacent said smaller active surface, said third pressure medium chamber being pressurized when said stepped piston is displaced to pressurize said first pressure medium chamber to initially activate said first master cylinder piston, to hold said booster piston in its initial

position and to remove the mechanical association between said booster piston and said first master cylinder piston.

4,225,023

COLLECTOR HEAD FOR TROLLEY CARS

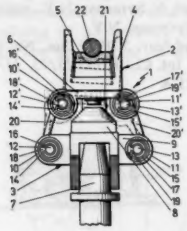
Anton Bautz, Crans, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Nov. 8, 1978, Ser. No. 958,547

Claims priority, application Switzerland, Nov. 10, 1977, 13707/77

Int. Cl.³ B60L *5/06*

U.S. Cl. 191—59.1 **13 Claims**



1. A collector head for attachment to a shaft extending generally vertically with respect to a trolley car, said collector head comprising:

a base member including means for pivotably mounting the base member on said shaft with said base member being rotatable about a generally vertical axis;

a contact holder including means for conducting an electric current; and

connecting means for pivotably connecting said base member with said contact holder,

wherein said connecting means includes resilient means for restraining motion of said contact holder relative to said base member, and

wherein said connecting means further includes at least two rigid arms each pivotably connected both to said base member and to said contact holder, each of said rigid arms being pivotable about a longitudinal axis of the collector head.

4,225,024

LOCKING DEVICE FOR REVERSE GEAR OF A MOTOR VEHICLE TRANSMISSION, ESPECIALLY FOR AN AUTOMOBILE

Gyözö Kuzma, Dachau, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

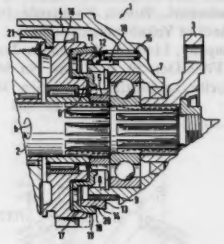
Filed Mar. 1, 1978, Ser. No. 882,333

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2708999

Int. Cl.² F16D *23/06*

U.S. Cl. 192—53 F **9 Claims**

1. A locking device for a reverse speed of a motor vehicle transmission, especially an automobile, the transmission including a transmission housing, a driven shaft, a friction ring adapted to be brought into frictional engagement with a reverse gear wheel when shifting into a reverse speed, the friction ring cooperating with a dog which is spring-loaded in an axial direction, the dog selectively displacing locking elements into a locking position for preventing engagement of the reverse gear wheel during predetermined operating conditions of the transmission, characterized in that the friction ring is non-rotatably and slidably mounted on the driven shaft between the gear wheel and the dog, the gear wheel is freely rotatably mounted on the driven shaft and is adapted to be selectively coupled thereto, and in that the dog is arranged on portions of



the transmission housing so as to be coaxial with respect to the driven shaft.

4,225,025

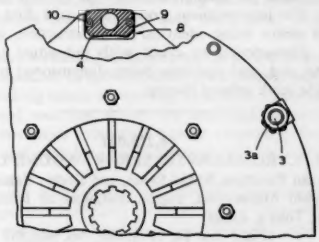
FRICTION CLUTCH

Peter F. Crawford, Coventry, England, assignor to Automotive Products Limited, Warwickshire, England

Filed Apr. 11, 1978, Ser. No. 895,458

Int. Cl.² F16D *13/70*

U.S. Cl. 192—70.2 **2 Claims**



1. A friction clutch assembly having:

a cover;

a driving member fast with the cover;

a pressure plate rotationally fast with the cover and movable along the axis of rotation of the clutch relative to the cover and located axially between the cover and the driving member;

a driven plate located between the pressure plate and the driving member;

a plurality of spacers secured to the cover and spacing the cover from the driving member;

grooves located on each radial side of each of said spacers;

wear resistant pieces force fitted one into each groove such that a portion of the wear piece is proud of the groove and through which torque is transmissible between the spacers and the pressure plate and against which wear pieces the pressure plate axially slides;

each wear piece being in the form of a hollow cylindrical pin received with an interference fit within a groove in the associated spacer; and

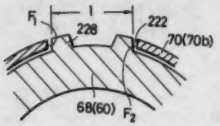
said pin is a rolled steel strip forming a cylinder having an unstressed diameter greater than the groove into which it is fitted.

4,225,026

CLUTCH MECHANISM FOR AUTOMATIC POWER TRANSMISSION

Takahiro Yamamori, Tokyo; Kazuyoshi Iwanaga, and Kunio Ohtsuka, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 30, 1978, Ser. No. 956,132
Claims priority, application Japan, Sep. 18, 1978, 53-114938
Int. Cl.[3] F16D 25/063
U.S. Cl. 192—70.2 6 Claims



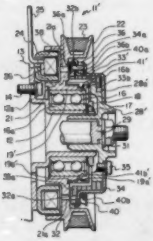
1. In a power transmission having: a first clutch including a first drum, a cylindrical member coaxially disposed within and secured to said first drum to be rotatable therewith and having therearound a plurality of grooves extending in parallel with the axis of said cylindrical member, and a plurality of first clutch plates each having on the periphery thereof radially outwardly projecting teeth which are splined to said grooves so that said first clutch plates are axially movable with respect to said cylindrical member; and a second clutch including a second drum having therearound a plurality of elongate through openings extending in parallel with the axis of said second drum, and a plurality of second clutch plates each having on the periphery thereof radially outwardly projecting teeth which are splined to said openings so that said second clutch plates are axially movable with respect to said second drum, the improvement comprising: said first and second clutch plates being identical in construction; said grooves being dimensioned to coact with individual teeth splined thereto; and, said openings being dimensioned to coact with multiple teeth splined thereto.

4,225,027

ELECTROMAGNETIC SPRING-WOUND CLUTCH

Hideyasu Takefuta; Kohki Iwata, and Toshio Yamaguchi, all of Higashi Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,262
Claims priority, application Japan, Sep. 28, 1977, 52-129241; Nov. 9, 1977, 52-149377
Int. Cl.[2] F16D 27/10, 13/08
U.S. Cl. 192—84 T 5 Claims



1. An electromagnetic spring-wound clutch including a rotary input member, a rotary output member coaxial with the input member, a rotary clutch disc axially aligned with the input member and frictionally engageable therewith, a coil-wound spring wound around the input member and output member and being connected at its ends to the clutch disc and output member respectively and an electromagnetic coil which, when energized, attracts the clutch disc into frictional engagement with the input member, characterized by comprising:

a resilient sleeve coaxially and rotatably disposed between the coil-wound spring and the input member, the sleeve being formed with a circumferential gap;

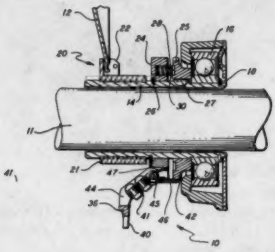
the input member being formed with a circumferential groove, the sleeve being formed with a tab which fits in the groove.

4,225,028

SELF-ADJUSTING RELEASE MECHANISM WITH ADJUSTMENT LIMITING MEANS

George L. Wishart, N. Syracuse, N.Y., assignor to Lipe-Rollway Corporation, Syracuse, N.Y.

Filed Nov. 3, 1978, Ser. No. 957,547
Int. Cl.[2] F16D 13/75, 13/54
U.S. Cl. 192—111 A 4 Claims



1. In a friction clutch for connecting driving and driven shafts, the clutch having means for normally effecting a driving connection between the shafts and a release mechanism axially slidable on the driven shaft for disengaging said driving connection, the release mechanism including first and second adjustment effecting members one of which is rotatable with respect to the other to compensate for wear occurring in the driving connection; the improvement comprising means for preventing relative rotation between the adjustment effecting members when the speed of the driving shaft is in excess of a predetermined number of r.p.m.'s, said prevention means including means rockably connected to one of the adjustment effecting members and movable by centrifugal force into latching engagement with the other member.

4,225,029

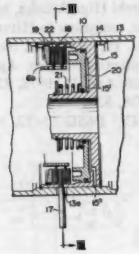
AUTOMATIC TRANSMISSION FOR AUTOMOBILES

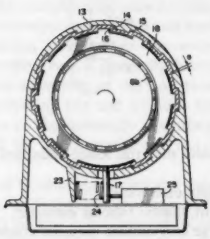
Fumihiro Ushijima, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 25, 1977, Ser. No. 827,724
Claims priority, application Japan, Sep. 13, 1976, 51-109679
Int. Cl.[3] F16D 67/02, 67/00; F16H 3/74
U.S. Cl. 192—12 C 5 Claims

1. An automatic transmission for automobiles, comprising a housing having an opening therethrough, an input shaft, an output shaft, a gear means having a power input element, a first friction engaging means including a first oil servo means and selectively connecting said input shaft with said power input element, a second friction engaging means including a second oil servo means and selectively braking said power input element, the engagement of said first friction engaging means effecting a first speed stage while the engagement of said second friction engaging means effects a second speed stage, said second friction engaging means having first and second mutually engageable friction elements and a spline member which engages said first friction elements, a projection fixedly secured to said spline member and extending substantially radi-

ally therefrom so as to pass through said opening in said housing, said spline member being mounted to said housing to be rotatable in it with respect to it through a small angle, said second friction element being connected with said power input member, means for biasing said spline member in a first rotational direction in said housing, said power input member being driven by said input shaft in a second rotational direction opposite to said first rotational direction when said first friction engaging means is engaged in engine driving, said power input member being driven by said output shaft in said second rotational direction when said second friction engaging means is engaged in engine braking, said power input member being driven by the reaction to rotation of said output shaft in said first rotational direction when said second friction engaging means is engaged in engine driving, and an oil pressure circuit means including a source means of oil pressure, a shift valve for changing over supplying of oil pressure from said source means to one of said first and second oil servo means while





changing over exhausting of oil pressure from the other of said first and second oil servo means, a first timing valve shiftable by said projection in accordance with a small rotation of said spline member relative to said housing so as to throttle the supply of oil pressure from said source means to said second oil servo means when said spline member is rotated relative to said housing for a medium rotational angle in said second rotational direction and so as to rapidly exhaust oil pressure from said second oil servo means when said spline member is rotated relative to said housing in said second rotational direction beyond said medium rotational angle, and a second timing valve adapted to be shifted by the oil pressure supplied to said second oil servo means so as to intercept the exhausting of said second oil servo means by said first timing valve while establishing another passage for supplying oil pressure to said second oil servo means when a predetermined time has lapsed after the initiation of the supply of oil pressure from said source means to said second oil servo means.

4,225,030

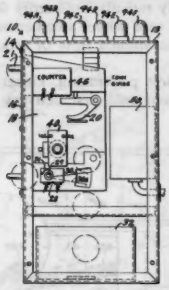
AUTOMATIC INDICATOR FOR A GAME

Lowell E. Kilman, Jr., 3121 Keemont, Toledo, Ohio 43613

Filed Oct. 18, 1978, Ser. No. 952,474

Int. Cl.[3] G07F *17/32*

U.S. Cl. 194—12 **3 Claims**



1. An automatic indicator for a game having a plurality of individual plays per person, said indicator having electrical means to record games paid for in coin and functioning to display electrically and automatically the exact number of plays paid for by an individual player, comprising:

(a) a coin receptacle for receiving a plurality of coins in succession;

(b) mechanical switching means in said coin receptacle for registering each successive coin input into said coin receptacle;

(c) electrical relay means in said coin receptacle and connected to said mechanical switching means, said electrical relay means activated by said mechanical switching means;

(d) multiple mechanical switching means in said coin receptacle connected to said electrical relay means, said multiple switching means comprising a plurality of successively positioned switches which are activated in succession upon successive individual signals emanating from the mechanical switching means through said electrical relay means;

(e) a plurality of electrically activated lights each connected to a respective individual switch in said multiple switching means, wherein each light is activated when a corresponding switch is closed; and

(f) a plurality of diode rectifiers connected to said multiple mechanical switching means and each of the electrically activated light means, said diode rectifiers serving to hold an electrical signal to the previously energized light.

4,225,031

ARTICLE ORIENTATION DEVICE

Donald Frisbie, R.R.#2, Northfield, Minn. 55057; Larry D. Frisbie, Bricelyn, 56014, and Joel J. Olson, 2836 Blackstone, St. Louis Park, Minn. 55416

Filed Sep. 6, 1978, Ser. No. 939,998

Int. Cl.[2] B65G *43/08, 47/24*

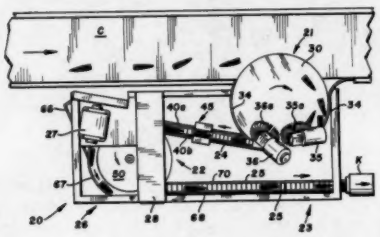
U.S. Cl. 198—395 **11 Claims**

1. A device for orienting tapered articles to a desired end to end relation, the articles being delivered to the device in a random fashion, said device including:

a. a first delivery section arranged to receive the articles in a random fashion and deliver the same in aligned, single file relation;

b. an orientation section including detection and rotating structures arranged to receive the articles from said first delivery means and selectively turn certain ones thereof whereby all of the articles are arranged in the same end to end relation;

c. a second delivery section arranged to receive the oriented articles from said orientation section for delivery;
d. said orientation section including;
1. at least one, generally horizontal, rotating wheel member positioned to receive articles from said first delivery section and deliver the same to said second delivery section;
2. a ramp element arranged adjacent said wheel arranged to extend generally radially outwardly from and angularly upwardly from said wheel member and being generally aligned with the aligned flow of articles from said first delivery section;
3. a shiftable, article positioning, kicker element arranged generally adjacent said first delivery section, normally



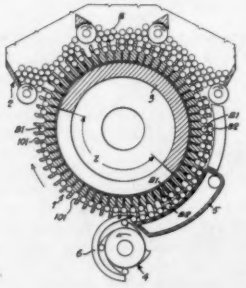
positioned to direct the articles onto said rotating wheel for unshifted delivery to said second delivery section and being shiftable from said normal directing position to at least a second position to direct one end of the articles onto said ramp element, the other end of the article being delivered to said rotating wheel whereby the rotating movement of said wheel moves the other end of the article forwardly of the one end of the article for delivery of the same to said second delivery section in shifted, reversed position; and,
4. said detection structure arranged adjacent said first delivery section, sensing the end to end orientation of the articles being delivered therepast and arranged to control the position of said kicker.

4,225,032

DEVICE FOR REMOVING ROD-LIKE ARTICLES FROM A HOPPER

Gianluigi Gherardi, Medicina, Italy, assignor to CIR S.p.A. - Divisione Sasib, Bologna, Italy

Filed Jan. 16, 1979, Ser. No. 3,956
Claims priority, application Italy, Jan. 23, 1978, 12436 A/78
Int. Cl.³ B65G *47/12*
U.S. Cl. 198—443 **5 Claims**



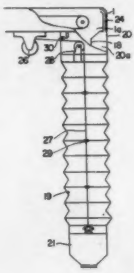
1. A device for the removal of rod-like articles, such as cigarette filter plugs, from a hopper containing a supply of said articles, said hopper being closed at its bottom by a drum rotating on a horizontal axis and presenting a plurality of peripheral flutes parallel to its axis, transfer means being provided at a point of the circumferential path of the drum located outside of the hopper to transfer the articles housed in the flutes to a feed conveyor operatively coupled with the rotating drum, wherein the improvement consists in that each flute of the rotating drum presents a depth so as to be capable of housing at least two articles arranged parallel to each other and the one above the other in radial direction, and the said transfer means take out at least one article from each flute, and transfer it to the said feed conveyor, there being provided a concave suction guide covering the flutes over an arc immediately prior to the transfer means, whereby either the single article housed in the flute, or the outermost article of at least two articles housed in the flute, is sucked towards the exterior against the concave suction guide, until it reaches the transfer means.

4,225,033

DUSTPROOF CHUTE FOR PARTICULATE MATERIAL LOADER

Kouichi Fukagai; Kouichi Higashinaka, and Kazuo Shirasaki, all of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Japan

Filed Oct. 19, 1978, Ser. No. 952,665
Claims priority, application Japan, Apr. 21, 1978, 53-47465; Apr. 21, 1978, 53-47466; Apr. 21, 1978, 53-47467; Apr. 21, 1978, 53-47468; Apr. 21, 1978, 53-47469
Int. Cl.² B65G *65/32, 11/14*
U.S. Cl. 198—524 **6 Claims**



1. In a particulate material loader adapted with a material feeding device:
a dustproof chute comprising:
(a) an air-tight, elastic tubular member;
(b) a discharge end tubular member connected to a lower end of said air-tight, plastic tubular member with said discharge end tubular member comprising a shock absorber tubular member, a deflecting member, and an inner tube;
(c) a particulate material stream diameter controlling tubular member located within said elastic tubular member adapted to communicate with said feeding device;
wherein:
said shock absorbing tubular member is adapted to receive a downward flow of particulate materials,
said deflecting member is adapted to cross a downward flow path of said particulate materials, and
said inner tube is arranged inside said discharge end tubular member so as to define a passage which cooperates with a fan;
whereby:
a downward flow of particulate material would avoid contact with said air-tight, elastic tubular member and temporarily stay in said discharge end tubular member, and
the powdery dust which floats above the deposited partic-

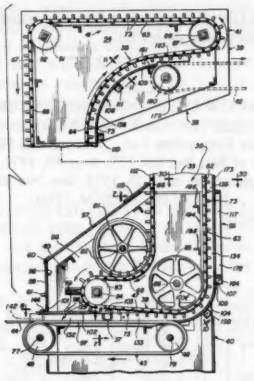
ulate material would be drawn into said discharge end tubular member through said passage defining inner tube by said fan.

4,225,034

CONTAINER CONVEYING AND ELEVATING APPARATUS

Steve Sarovich, Oak Brook, Ill., assignor to The Sardee Corporation, Alsip, Ill.

Filed Jul. 3, 1978, Ser. No. 921,812
Int. Cl.[2] B65G *15/24*
U.S. Cl. 198—607 **15 Claims**



1. A conveying and elevating apparatus for conveying and elevating articles from a supply of randemly arranged articles while maintaining their orientation, said apparatus comprising:

(a) an upwardly extending elevator housing,

(b) an endless conveyor mounted in said housing for conveying said articles, said endless conveyor having an upwardly extending run, a generally horizontal lower run which curves upwardly at the end thereof to join said upwardly extending run and a return run which extends from the top of the upwardly extending run and which merges with the horizontal lower run at the beginning thereof,

(c) a plurality of flexibie conveying and supporting members mounted on, and distributed transversely and longitudinally of, said endless conveyor and projecting outwardly therefrom on the side thereof which faces downwardly from said horizontal run,

(d) a bottom support extending below said horizontal run for supporting said articles as they become engaged by the flexible conveying and supporting members at the beginning of said horizontal run,

(e) a rear support which extends from said bottom support and which curves upwardly to follow said horizontal run and said upwardly extending run,

(f) anti-tilting means arranged below said horizontal run and extending laterally and horizontally across the run and longitudinally from the entrance thereto to a location beyond the beginning thereof and cooperating therewith and with said bottom support to maintain said randomly arranged articles oriented on said bottom support until said articles become engaged by said flexible conveying and supporting members,

(g) feed-in means for feeding said articles onto said bottom support, and

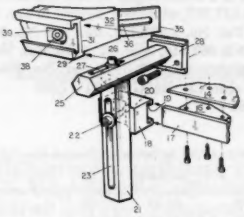
(h) discharge means for discharging said articles from the upper end of said upwardly extending run.

4,225,035

GUIDE RAIL SYSTEM FOR USE ON INSPECTION MACHINES

Harold F. Mohney, Maumee, Ohio, and Darius O. Riggs, Ottawa Lake, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 31, 1978, Ser. No. 938,563
Int. Cl.[2] B65G *21/20*
U.S. Cl. 198—836 **2 Claims**



1. In a multiple station glass container inspection machine wherein the ware is moved from station to station by an indexing of a series of pocket members in the form of an endless chain and wherein the ware is maintained in said pocket members by a side-engaging rail system, the improvement in the rail system comprising:

a plurality of individual rail members having a predetermined configuration, said rail members forming an uninterrupted rail that surrounds the outer periphery of the inspection machine, each rail member comprising a vertical post adjustably mounted to the inspection machine;

a horizontal rod mounted to the upper end of said vertical post, a dovetail member mounted on one of said rod;

a horizontal, slotted channel having a slot within which said dovetail is mounted for relative movement;

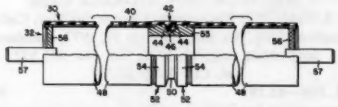
a bottle-engaging rail facing on said slotted channel opposite said slot, said facing being formed with a slotted area adjacent one end thereof and means mounted in said slotted area and engageable with the next adjacent member so as to bridge any gap therebetween.

4,225,036

ENDLESS BELT CONVEYOR

Thomas H. Michael, Blakesburg, Iowa, assignor to Deere & Company, Moline, Ill.

Continuation of Ser. No. 694,079, Jun. 9, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,921
Int. Cl.[3] B65G *15/60, 39/16*
U.S. Cl. 198—840 **8 Claims**



1. A belt-type conveyor comprising:

a plurality of substantially cylindrical rollers, at least one of which includes a circumferential groove having opposite walls and a bottom surface, disposed remote from the roller ends and carries on its cylindrical surface a pair of axially spaced flat-topped, raised annular ridges said ridges closely bracketing the groove; and

an endless flexible belt, having an inner surface and a rib having opposite sides extending from the inner surface parallel to the direction of belt travel, trained around the rollers so that the inner surface of the belt engages the

cylindrical surface and ridges of said roller and the rib engages the groove so as to guide the belt.

4,225,037

ACID-PROOF CONVEYOR

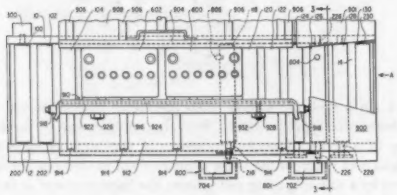
William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Continuation-in-part of Ser. No. 866,515, Jan. 3, 1978, and a continuation of Ser. No. 770,889, Feb. 22, 1977, Pat. No. 4,109,793, which is a continuation of Ser. No. 600,840, Jul. 31, 1975, Pat. No. 4,027,797, which is a division of Ser. No. 475,273, May 31, 1974, Pat. No. 3,938,368, said Ser. No. 866,515, is a division of Ser. No. 669,216, Mar. 22, 1976, Pat. No. 4,081,093.

This application Apr. 7, 1978, Ser. No. 894,349

Int. Cl.[3] B65G *21/20, 47/00*

U.S. Cl. 198—861 **5 Claims**



1. An acid-proof conveying apparatus for conveying electric storage batteries into and out of a battery processing position defined therealong, comprising:

a. trough means for receiving corrosive substances which may spill into the vacinity of the battery processing position;

b. roller means disposed within and supported by a trough means for conveying said batteries through at least a portion of said trough;

c. means for sensing the presence of the battery at least one location along said conveyor, said means being comprised of:

(i) at least one shaft supported by said trough extending through a wall of said trough,

(ii) trigger means causing the rotation of said shaft upon the introduction of a battery into said location,

(iii) switch means for engaging said shaft for responding to the rotation of said shaft to sense the presence of said battery, and

(iv) biasing means for biasing said shaft towards a normal position; and

d. an acid-sealed channel disposed adjacent to said trough, said biasing means being disposed within said channel.

4,225,038

MAGNETIC DISK STORAGE CASE

Robert A. Egly, 1630 Marguerite, Corona del Mar, Calif. 92625

Continuation of Ser. No. 834,488, Sep. 19, 1977, abandoned. This application Aug. 10, 1978, Ser. No. 932,532

Int. Cl.[3] B65D *85/00*

U.S. Cl. 206—45.18 **8 Claims**

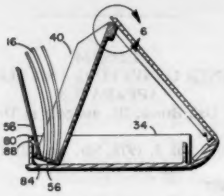
1. A container for holding magnetic memory storage members comprising:

a first co-extensively unbroken cover;

a second co-extensively unbroken cover hinged to said first cover by a web similar to a book-like binding having at least one living hinge, to provide a space between said covers when they are in folded overlying relationship;

a tray-like insert pivotally attached to one of said covers to allow said insert to be folded inwardly between said first and second cover; and,

said tray-like insert member having lateral side walls to prevent substantial movement of magnetic memory members stored therein with tabs overlying a portion of said tray to secure the magnetic memory members between the tabs and the base of said tray-like member in a manner to



allow the tabs to be moved to provide access to the memory members stored therein.

4,225,039

CONTAINER CASE AND BLANK THEREFOR

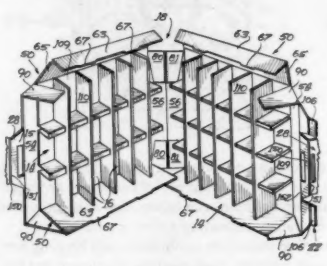
Kenneth R. Skaggs, Hoffman Estates, Ill., assignor to Kollectible Kontainer Enterprises Ltd., Schaumburg, Ill.

Continuation of Ser. No. 826,177, Aug. 19, 1977, abandoned.

This application Aug. 25, 1978, Ser. No. 936,757

Int. Cl.[3] B65D *75/04, 77/00*

U.S. Cl. 206—193 **2 Claims**



1. A display case adapted to swing open to a V-shape for displaying a large number of containers arranged in plural rows and columns and for carying and storing the containers, said case comprising a paperboard body; a pair of opposed container display sections erected from said paperboard body, each of said display sections comprising a central back panel, a pair of integrally attached opposite end panels integrally attached to said central panel along opposite longitudinal margins of said paperboard body, a pair of integrally attached top and bottom panels integrally attached to said central panel along the opposite transverse margins of said body, said end panels and said top and bottom panels being folded to project generally normal to said back panel to form an encircling wall about said back panel: divider means dividing each of said display sections into an array of compartments each for receiving and holding a container therein; fold line means in said paperboard body between said display sections joining said display sections for swinging movement relative to one another from a closed position in which said container receiving compartments are facing each other and closed to view and an open position in which said display sections are swung outwardly and disposed at an angle to each other to expose or display the container receiving compartments, said fold line means comprising a plurality of parallel fold lines extending transversely and a pair of bottom panels separated by a central one of said fold lines, said central one of said fold lines being at the axis about which the swinging movement takes place, handle means connected to said paperboard body for grasping when carrying the case; said handle means comprising at least one flap integrally attached to said paperboard body and hav-

ing a hand-receiving opening therein; a locking means for interlocking the display sections together in the closed position, said locking means comprising at least one flap on one display section of said body and a slotted receiving means on the other display section for receiving said locking flap therein; said divider means in each of said sections comprising a first plurality of parallel walls of material sufficiently rigid to support a container resting thereon, spaced equidistantly from each other to receive cans therebetween, a plurality of cross walls of material sufficiently rigid to support a container thereon in said divider extending parallel to each other and substantially normal to said first walls, said cross walls and the said first walls defining with each other and with said encircling wall about said back panel a plurality of rows and columns of container receiving compartments each of the same size, each of said compartments having an opening for receiving insertion of a container directly through said opening, at least some of said walls defining said compartments being compressed when a can is inserted to hold the same in its compartment against loosely falling therefrom, each of said openings allowing withdrawal of a container from its associated compartment.

4,225,040

PACKAGE FOR CIGARETTES OR THE LIKE AND PROCESS FOR PRODUCTION OF SAME

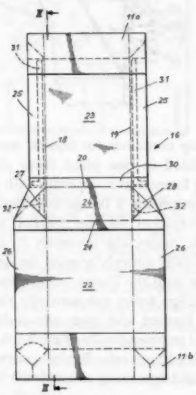
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Pfuhl, Verden, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,700

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712482

Int. Cl.[3] **229** *87C;* **B65D** *85/10*

U.S. Cl. 206—245 **6 Claims**



1. A package for cigarettes or the like of the hard cup type, characterized by:

(a) a generally rectangular hard cup package body formed from a blank of relatively thick, stiff paper, cardboard or similar material and having a moisture and aroma-proof metal coating covering its entire outer surface,

(b) an upwardly open mouth of the package body having a relatively thin and pliable strip of metal foil attached by gluing or the like to its inside edges to form openable closing folds of the package,

(c) a floor member of the package body being formed from elements of the relatively thick and stiff blank, and

(d) the package body having relatively thin and pliable sealing layers of metal foil in its interior at least in the areas of the four corners of the floor member.

4,225,041

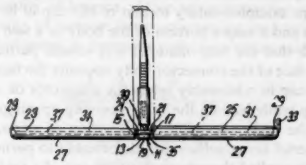
DUAL-HINGED CASE

Robert A. Lorenzini, 603 S. State Rd. 7, Margate, Fla. 33068

Filed Oct. 3, 1978, Ser. No. 948,141

Int. Cl.[2] **A45C** *11/00;* **B65D** *85/20*

U.S. Cl. 206—314 **8 Claims**



1. A dual-hinged case for carrying items, comprising:

a base section, said base section including a flat member of rectangular shape with a first major edge and a second major edge and with a pair of substantially parallel strips parallel to said first major edge and said second major edge and both located on the same side of said flat member at substantially right angles to said flat member, said parallel strips being resilient;

a first side section pivotably mounted on the first major edge of said base section;

a second side section pivotably mounted on the second major edge of said base section, said first side section and said second side section being adapted to contact one another with the first side section and the second side section substantially at right angles to said base section;

latch means for retaining said first side section and said section side section together; and

holding means for supporting items within the case including a base plate of rectangular shape and adapted to be retained securely but removably between said pair of parallel strips.

4,225,042

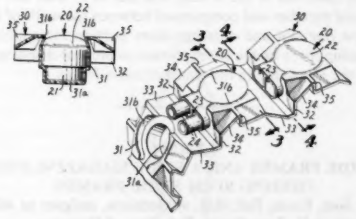
CONTINUOUS FILM CARRIER WIRE CONNECTING SYSTEM

Leo E. Anthone, Little Canada, and Sidney J. Berglund, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 16, 1978, Ser. No. 916,215

Int. Cl.[3] **B65D** *73/02, 85/00*

U.S. Cl. 206—332 **3 Claims**



1. A carrier strip for electrical wire connectors having a body with a plurality of longitudinal wire receiving openings in one end and a cap telescopically received in one face of the body for movement into the body from an open position to a crimped position to connect wires inserted into the openings, comprising:

a one piece flexible strip material formed at spaced locations along its length with similar connector receptacles, said carrier strip being generally planar across the face thereof opening into each of said receptacles, and said carrier strip

being formed with a first step adjacent the end of the connector receptacle at which the wire receiving openings in the connector body are accessible to provide the access to the wire receiving openings, a planar portion between connector receptacles, and having at least one compressible longitudinal edge alongside said connector receptacles, each of said connector receptacles having a shape complementary to that of the cap in its open position and a major portion of the body of a said connector, such that the strip material will extend partially around the face of the connector body opposite the face receiving the cap to releaseably retain the connector on said carrier strip while leaving the wire receiving openings in the end of the body accessible for insertion of wires, said strip material being sufficiently deformable to permit pressure to be applied therethrough to the cap of a said connector to crimp it into the body.

4,225,043

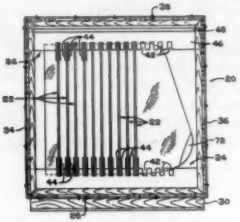
SECURING PADS FOR SHEET SHIPPING CONTAINERS

Joseph P. Lastik, Greensburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 927,082, Jul. 24, 1978, abandoned. This application May 7, 1979, Ser. No. 36,882

Int. Cl.³ B65D *19/00*

U.S. Cl. 206—448 **20 Claims**



1. In a sheet shipping container of the type having a pair of elongated members in spaced relation to one another in the container, each of the members having at least one slot for receiving edge portion of the sheet wherein the sheet is acted on by transportation forces which displace the sheet along a path generally transverse to longitudinal axis of the members the improvement comprising:

means mounted in the at least one slot of at least one elongated member and compressed between the walls of the at least one slot and adjacent sheet portion for applying a biasing force on the sheet portion to prevent displacement of the sheet due to the transportation forces.

4,225,044

SLIDE FRAMES AND A SLIDE MAGAZINE FOR STORING SUCH SLIDE FRAMES

Jochen Jost, Essen, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

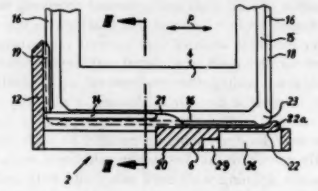
Filed Apr. 16, 1979, Ser. No. 30,142

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817005

Int. Cl.³ B65D *85/62;* **G09F** *11/30;* **B65D** *5/50*

U.S. Cl. 206—456 **36 Claims**

1. A slide frame adapted to be stored in a slide magazine having at least one undercut engaging portion of a predetermined configuration, said slide frame comprising a central portion for receiving a slide; and an edge portion circumferentially embracing said central portion and having at least one undercut section matingly complementing that of the undercut engaging portion of the slide magazine so that, when the slide



frame is installed on the slide magazine, the slide frame is prevented from falling out of the magazine.

4,225,045

CONTAINERS

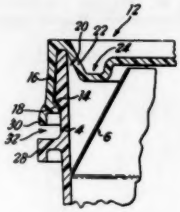
Adrien P. Rayner, Iver; John D. Messenger, Swindon, and James T. Green, Reading, all of England, assignors to Metal Box Limited, Reading, England

Filed Nov. 21, 1978, Ser. No. 962,621

Claims priority, application United Kingdom, Nov. 28, 1977, 49482/77

Int. Cl.² B65D *21/02, 25/02, 25/28, 43/10*

U.S. Cl. 206—508 **9 Claims**



1. An anti-slop container for liquids, having a side wall and a bottom moulded in one piece from plastics material, the container being formed to co-operate with and retain a replaceable lid, and comprising a flange moulded integrally with the side wall and adjacent the top thereof, said flange being of single thickness, projecting inwardly to a free edge, and extending substantially entirely around the side wall, at its attachment to the side wall the flange being upwardly and inwardly inclined, the flange being substantially thinner than the side wall and being formed with slots which divide the flange into portions flexible independently of each other, whereby all said portions are simultaneously flexible outwardly towards the container wall and upwardly towards the top of the container.

4,225,046

PLASTIC TRAY FOR FRUIT OR LIKE PRODUCTS

Ernst Ettema, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Nov. 15, 1978, Ser. No. 961,006

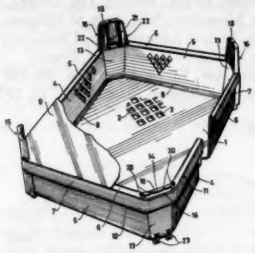
Claims priority, application Netherlands, Nov. 17, 1977, 7712760

Int. Cl.² B65D *21/00;* **A47J** *47/00*

U.S. Cl. 206—511 **10 Claims**

1. In combination, a tray of plastic comprising a base and side walls converging toward said base, at least the corner parts of the side walls including a wide rim having a ledge suspending outside the rim, a plurality of external stacking supports, the upper surface of the wide rim behind the ledge in each corner of the tray having an opening adapted to resil-

iently engage the support to permit pushing the support through said opening, said tray comprising one or more retaining members positioned to resiliently engage and lock with parts of the support.



4,225,047

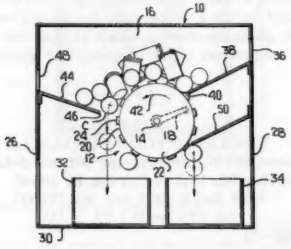
MAGNETIC CAN SEPARATOR

Alan A. Grubman, Chicago, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed May 30, 1979, Ser. No. 43,952

Int. Cl.[3] B07C *5/02, 5/344*

U.S. Cl. 209—544 **9 Claims**



1. A magnetic can separator comprising a drum having a substantially horizontal axis of rotation, said drum having a periphery and magnetic means disposed about said periphery, separate first and second receiving means disposed below said drum for receiving in sequence in the direction of drum rotation non-magnetically attractive cans and magnetically attractive cans, discharge means overlying said second receiving means for removing cans magnetically adhering to said drum, and deflector means for deflecting each can placed in said separator to a position substantially parallel with said drum axis prior to movement of the can to a position for discharging into one of said receiving means.

4,225,048

CLOTHESLINES

William G. Hildreth, 19 Karaka St., Hamilton, New Zealand

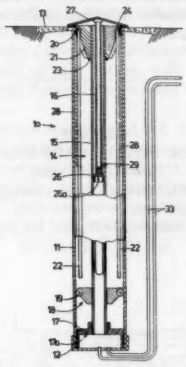
Filed Dec. 12, 1978, Ser. No. 968,783

Claims priority, application New Zealand, Dec. 12, 1977, 185938

Int. Cl.[2] A47F *5/04*

U.S. Cl. 211—1.3 **16 Claims**

1. A collapsible clothesline comprising a casing, a telescopic stem telescopically retractible into and extensible from said casing, said stem comprising an outer stem element and inner stem element which in used is telescopically retractible downwardly into and extensible upwardly from said outer stem element, first sealing means disposed between said casing and said outer stem element to hydraulically seal said casing and said outer stem element together, second sealing means disposed between said outer and inner stem elements to hydraulically seal said stem elements together. a plurality of arms carried by said outer stem element and pivotable between a use position in which they extend substantially radially of said stem and a storage position in which they extned alongside said stem, a plurality of lengths of line interconnecting said arms, and a plurality of support ties so connecting said arms to said inner stem element at its upper end as to cause said arms to



pivot from the storage position to the use position on extension of said inner stem element from said outer stem element and to permit said arms to pivot from the use position to the storage position on retraction of said inner stem element into said outer stem element, said casing being provided with inlet and outlet means for admission and exhaust of liquid under pressure and said inner and outer stem elements being provided with means actable on by such liquid under pressure to effect extension of said outer stem element from said casing and said inner stem element from said outer stem element.

4,225,049

PACKAGED ARTICLE COVERED WITH SPECIAL FILM

Tadashi Inoue, Fujisawa, Japan, assignor to Asahi-Dow Limited, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,545

Claims priority, application Japan, Jun. 20, 1978, 53-83612[U]

Int. Cl.[3] B65D *23/08*

U.S. Cl. 215—12 R **13 Claims**

1. In a packaged article comprising a shaped article having different circumferences of the cross-sections along the longitudinal axis thereof with a ratio of the maximum circumference to the minimum circumference of from 1.5 to 6 which is wrapped in a continuous transparent film, said film being a heat-shrunk product of a stretched crosslinked polyolefin resin film, the improvement which comprises the film having specific elastic characteristic at wider parts of the article with

longer circumferences, thereby holding said film tightly through the elastic tension at the wider parts, the value of said characteristic ranging from 1 to 80% in terms of the specific percent shrink (A) as defined by the following formula:

$$(A) = \frac{(x) - (y)}{(x)} \times 100\,(\%)$$

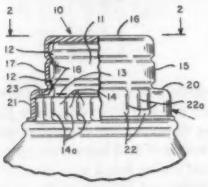
wherein (x) is the maximum circumference of the film covered on the surface of said article and (y) the maximum circumference of the film released from said article and left to stand at 25° C. for 10 minutes.

4,225,050

TAMPER-PROOF BOTTLE CAPS AND METHOD OF FORMING SAME

Douglas M. Reinhart, Stratford, Conn., assignor to Segen Industries, Inc., Devon, Conn.

Filed May 21, 1979, Ser. No. 40,630
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **6 Claims**



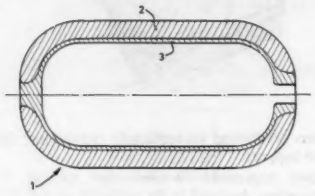
1. A tamper-proof thermoformed plastic cap which is adapted to be applied in unitary form to a container neck having an engagement thread and a retainer means associated with said thread but which is resistant to removal in unitary form from said container neck, comprising a main cap body having a top surface and a cylindrical side wall extending downwardly from said top surface and having an internal thread for engaging the thread on said neck to seal said container, and an annular retainer skirt element which is coaxial with and has a larger diameter than said main cap body, said retainer skirt element having a top surface comprising an annular horizontal flange extending radially from the base of said cap body and a cylindrical vertical side wall extending downwardly from the outer edge of said flange, said side wall being provided with engagement means adapted to slip over the retainer means present on the container when said cap is rotated onto the threaded neck to seal said container but to resist counter-rotation of said cap, characterized by said annular flange being provided with a plurality of transverse severance lines, said lines forming a segmented cut in said flange at a location closely spaced from the base of said main cap body, the leading end of each of said lines extending outwardly from said segmented cut in the direction of removal of said cap to form a narrow bridging area of said flange which is flexible upwardly, relative to the horizontal flange and in the direction of removal of said cap to permit slight relative movement between said main cap body and said retainer skirt when said main cap body is reverse rotated, whereby when the cap is engaged on a container opening and reverse-rotational pressure is applied thereto, the retainer skirt element remain engaged by said retainer means while the main cap body can be rotated sufficiently to cause each said bridging area to flex and break, thereby permanently separating said cap into said main cap body and said retainer skirt element the first time the cap is removed from the container.

4,225,051

CONTAINERS FOR STORING FLUIDS UNDER PRESSURE

Jean-Yves Faudou, Orsay, France; Luc Delaey, Bertem, and Dirk Van de Mosselaer, Niel, both of Belgium, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 13, 1978, Ser. No. 895,999
Claims priority, application France, Apr. 15, 1977, 77 11374
Int. Cl.³ F17C *1/06*
U.S. Cl. 220—3 **8 Claims**



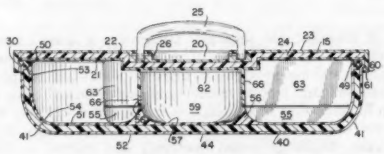
1. In a container for storing fluids at a pressure higher than atmospheric pressure, an outer shell formed by winding fibres of high specific mechanical strength impregnated with thermosetting resin to resist mechanical stresses set up by the fluid under pressure, and an inner wall of metallic material which forms an inner lining for the said shell and which provides a seal, said inner wall being made of a metallic material capable of undergoing a change in crystalline structure of the martensitic type and having a temperature for the appearance of the martensitic phase on cooling which exceeds the usual mean operating temperature of the container and ambient temperature.

4,225,052

INSULATED FOOD CONTAINER

Nancie Tector, 850 W. Margate, Apt. 301, and John V. Curley, 5016 Sheridan Rd., both of Chicago, Ill. 60640

Filed Jan. 6, 1977, Ser. No. 757,445
Int. Cl.³ B65D *1/24, 25/28*
U.S. Cl. 220—22 **3 Claims**



1. A portable insulated container for the temporary transportation and storage of foods desired to be maintained at a certain temperature, including a dish portion and a cover portion, said cover portion being threadedly secured to said dish portion in a fluid-tight manner, said dish portion having a generally upstanding exterior side wall, a substantially flat exterior bottom wall and a plurality of sections for the containment and separation of different foods or beverages within the interior thereof, said sections being formed by a central circular partition and a series of angularly spaced food partitions extending radially from said central partition toward said side wall, said circular partition and said food partitions extending upwardly, said cover portion having a plurality of partitions extending downwardly from an inside surface thereof, said downwardly extending partitions corresponding in arrangement and location to said upwardly extending partitions of said dish portion, said cover portion and said dish portion each containing indicating means alignable when said cover portion is threadedly secured to said dish portion to form a fluid-tight seal to thereby place said upwardly extending food partitions and said cover parti-

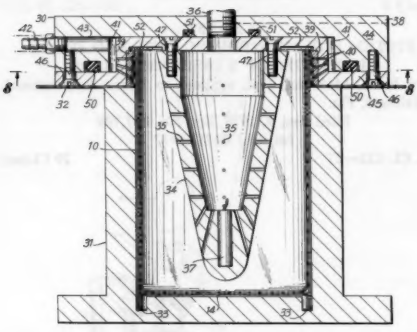
tions in complementary positions to form said compartments within said container for holding said foods and beverages and maintaining the integrity of the foods and beverages in each of said compartments, said cover portion having a handle, said handle being centrally located in a recess formed in an outside top surface of said cover portion, said handle being pivotal from a flat position within said recess to an upright position for carrying said containers to allow the transport of said container carrying said food and said beverages by said handle while sealing the heat and flavor of said foods within said container.

4,225,053

COMPOSITE CONTAINER FOR STORING FOOD

George H. Naugle, Central Valley; Robert L. Gordon, Monroe, and Richard J. Pines, Middletown, all of N.Y., assignors to International Paper Company, New York, N.Y.

Filed May 15, 1978, Ser. No. 906,275
Int. Cl.[3] B65D *25/14, 41/04, 41/20*
U.S. Cl. 220—416 **10 Claims**



1. A composite container comprising:

(a) an outer container constructed from paperboard comprising at least one vertical wall and having a circular cross-section at its top and having a generally uniform cylindrical surface along its longitudinal length;

(b) a drawn and blow formed plastic inner container, said inner container having a flange formed as plastic screw threads connected to the top of said inner container, said flange extending downwardly and outwardly in close proximity to and surrounding the upper portion of said uniform cylindrical surface of the outer container, the flange having substantially uniform thickness throughout its cross-section, and the imaginary straight line tangent to and connecting the innermost portions of the outer surface of the screw threads being inclined from the longitudinal vertical axis of said composite container.

4,225,054

THERMALLY INSULATED TANK FOR LAND STORAGE OF LOW TEMPERATURE LIQUIDS

Pierre Jean, Montivilliers, France, assignor to GAZ-Transport, Paris, France

Filed Jul. 18, 1978, Ser. No. 925,815
Claims priority, application France, Jul. 26, 1977, 77 22882
Int. Cl.[3] B65D *90/04*
U.S. Cl. 220—436 **15 Claims**

1. A tank for static storage of a liquid at low temperature, said tank comprising an upright side wall and a bottom,

said side wall comprising

an exterior casing,

an internal wall forming an impermeable barrier, and

thermal insulation between said casing and said internal wall,

said bottom of the tank comprising

a horizontal bottom wall forming an impermeable barrier at the bottom of the tank, and

thermal insulation beneath the bottom wall, said internal wall comprising

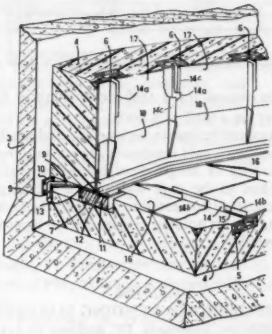
a plurality of parallel bands of thin stainless steel, said bands extending vertically and each having side flanges, and

welds along said flanges to seal said internal wall,

said bottom wall comprising a plurality of parallel bands of thin metal having a very low coefficient of thermal expansion, said bands of said bottom wall each having side flanges, said side flanges being welded to seal said bottom wall,

a corner structure connecting said side wall to said bottom wall in sealed relation and comprising,

an annular beam supported by thermal inlation and comprising a plurality of rigid beam sections, adjacent facing ends of adjacent beam sections being secured together by a common gusset so that each end of a beam



section is attached to a gusset, each beam section having attached thereto an L-shaped angle assembly of a material of low thermal expansion and presenting a vertical leg and a horizontal leg, and

a vertical lining strip comprised of flanged sheets in side by side relation and of the same width respectively, as the stainless steel bands of said inner wall,

said flanged lining sheets extending generally vertically between said angle assembly and said inner wall, being welded along their edges, and being welded to said vertical leg of said angle assembly and to said stainless steel bands of said side wall,

means for securing each gusset to said outer casing with anchoring elements arranged symmetrically with respect to a radial plane of the tank at regularly spaced intervals around the periphery of the tank, adjacent anchoring elements of two adjacent gussets located at each end of a beam section being secured to a common anchor plate secured to the external casing of the tank, and

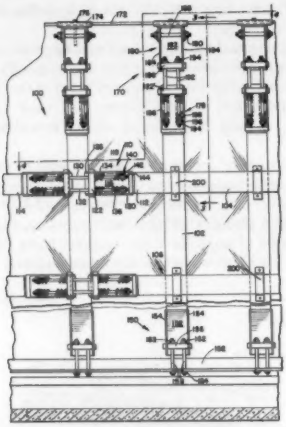
means mounting said side wall and said bottom wall on sliding joints for sliding movement with respect to said thermal insulation.

4,225,055

INSULATION FOR DOUBLE WALL TANKS

Richard E. Hills, Coraopolis, and Derek K. Neely, Pittsburgh, both of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 60,602
Int. Cl.[3] B65D *90/04*
U.S. Cl. 220—452 16 Claims



1. Insulation means for a tank comprising: a first fibrous insulation layer on a wall of a tank;

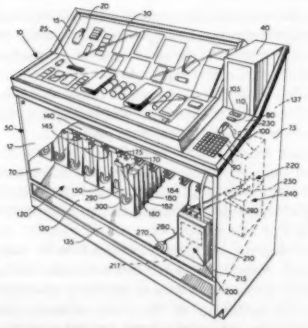
insulation supporting means supporting said insulation layer on the tank wall, said insulation supporting means including a plurality of longitudinal bands vertically oriented and attached to the tank wall, and a plurality of lateral bands horizontally oriented to surround the tank wall, said supporting means holding said insulation layer in place on the tank wall.

4,225,056

COMPUTERIZED VENDING MACHINE

Charles H. Flubacker, Rosemont, Ill., assignor to Artag Plastics Corporation, Rosemont, Ill.

Filed Sep. 28, 1978, Ser. No. 946,633
Int. Cl.[3] G07F *11/16*
U.S. Cl. 221—2 16 Claims



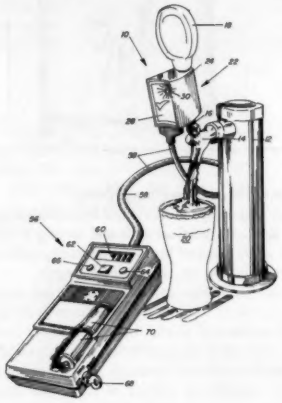
1. A vending machine for dispensing a plurality of products comprising, a frame having a product delivery plate mounted thereon, a plurality of product dispensing racks supported by said frame, each member of said plurality having an associated means for dispensing, one at a time, a product stored on the said rack, a coin sensing mechanism, a coin box affixed to said coin sensing mechanism, means for selecting one of the plurality of product dispensing racks for dispensing a selected product, means affixed to said product delivery plate for detecting the impact of one of the selected product against said product delivery plate, control means for receiving signals from said coin sensing mechanism and accumulating a current total in a selected memory location, including means for sensing an output from said means for selecting defining a selected one of the plurality of products to be dispensed, reading a pre-stored price corresponding to the selected product, comparing the accumulated total in said selected memory location to the pre-stored price of the selected product, activating a selected one of said means for dispensing associated with a selected member of said plurality of dispensing racks to dispense one of the selected product if the contents of said selected memory location equals to the pre-stored price of the selected product and sensing whether one of the selected product has been dispensed by sensing a signal from said means for detecting the impact of one of the selected product against said product delivery plate.

4,225,057

SYSTEM FOR MONITORING UNIT AND TOTAL QUANTITIES OF A DISPENSER FLUID

Jerry Horn, Maitland, Fla., assignor to Zyvex International, Maitland, Fla.

Filed Jan. 9, 1978, Ser. No. 867,799
Int. Cl.[3] B67D *5/12*
U.S. Cl. 222—27 29 Claims



1. An apparatus for measuring and totalizing an amount of a fluid dispensed through an outlet from a reservoir of said fluid, said outlet of the type controlling the flow of said fluid from said reservoir by movement between open and closed positions, said apparatus comprising:

position detecting means coupled at said outlet for detecting said movement between said open and closed positions and providing an electrical output responsive thereto:

totalizing means receiving said output from said position detecting means and totalizing an amount of said fluid passing through said outlet based on a setting in said totalizing means for a predetermined flow rate;

means for changing said totalizing means to a setting representative of another predetermined flow rate;

a count display;

means for coupling said count display to an output of said totalizing means whereby a count representative of said amount of said fluid may be displayed;

a key operated switch;

circuit means coupling said key switch to said totalizing means;

means coupled through said key switch to said totalizing means for providing a signal to said totalizing means responsive to operation of said key switch to clear said amount therefrom;

indicating means coupled to a first output of said totalizing means; and

means for energizing said indicating means for each occurrence of a preselected amount of said fluid passing through said outlet at said predetermined flow rate.

4,225,058

NOZZLE CAP HAVING OPENING MEANS

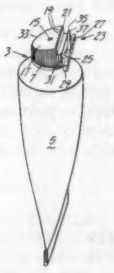
Reginald F. Morton, Leicester, and Sidney Glover, Worsley, both of England, assignors to USM Corporation, Farmington, Conn.

Filed May 25, 1979, Ser. No. 42,435

Claims priority, application United Kingdom, May 30, 1978, 24189/78

Int. Cl.³ B67B *7/24*

U.S. Cl. 222—81 **4 Claims**



1. A plastic nozzle cap for a compressible tube having a sealed outlet opening, said cap comprising an outlet bore, means for securing the cap to the tube, said outlet bore being positioned in a predetermined relationship with the outlet opening of the tube to which it is to be secured so that when the cap is secured to the tube, a device can be inserted into the outlet bore to pierce the sealed outlet opening of the tube said device being joined with a peripheral surface of the cap by means of an integrally molded frangible rib so that it can be readily broken from the cap and having a portion dimensioned and shaped so that the device can be inserted into the outlet bore for piercing the sealed outlet opening of the tube and for closing the outlet bore.

4,225,059

PORTABLE BEVERAGE COOLER AND DISPENSER

Christopher Kappos, Cambridge, Iowa 50046

Filed Dec. 14, 1978, Ser. No. 969,540

Int. Cl.³ B67D *5/62*

U.S. Cl. 222—146 C **3 Claims**

1. As a new article of manufacture, a portable beverage cooler and dispenser comprising in combination:

a wheeled trailer frame including a tongue and hitch for attachment to a motor vehicle and constructed with a capability for highway travel at highway speeds of such vehicle,

an insulated closed container having a top, front, rear, bottom and opposed sides and suitably mounted on said trailer,

an insulated ice chamber in the upper interior portion of said container defining a compartment in the lower portion thereof,

said top provided with an opening communicating with said ice chamber,

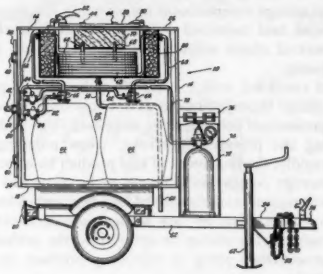
a latchable door on said container for said opening,

said rear provided with an opening to said compartment

a latchable door for the opening to said compartment,

a valved spigot mounted to the exterior of one side of said container,

a flexible dispensing hose connected at one end to said spitot and having its major length disposed in said ice chamber,



the other end of said flexible hose being extended through said ice chamber into said compartment for operable connection to any liquid beverage receptable placed therein,

a valved liquid charging means mounted on said tongue adjacent the front of said container, and

a pressure hose within said compartment having one end adapted for attachment to any liquid beverage receptacle placed therein and the other end extended through the fron of said container for operable attachment to said liquid charging means.

4,225,060

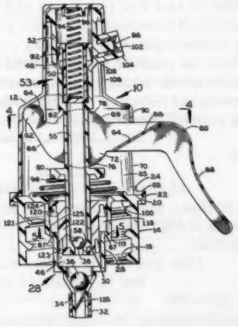
CONTINUOUS PUMPING SYSTEM

Louis F. Kutik, Ft. Lauderdale, and Howard E. Cecil, Miami Lakes, both of Fla., assignors to Security Plastics, Inc., Miami Lakes, Fla.

Filed Dec. 29, 1978, Ser. No. 974,328

Int. Cl.³ B05B *11/00*

U.S. Cl. 222—189 **16 Claims**



1. In a pumping system for use with a container for product and a dip tube to dispense product from the container through the dip tube, said pumping system including:

a housing with a mounting means to be affixed to the container;

a manually actuated pressurizing pump including first and second check valves and a first spring-loaded piston and cylinder assembly for withdrawing a quantity of product

from the container through said dip tube and first check valve during an intake stroke and for pressurizing said quantity of product during a pressurizing stroke;

storage compartment means including a second spring-loaded piston and cylinder assembly expandable for storing, under a pressure determined by said second spring-loaded assembly, a quantity of pressurized product received through said second check valve from said pressurizing pump; and

means forming a restricted outlet orifice;

said storage compartment means being functionally located with said restricted outlet orifice at its outlet and said second check valve at its inlet from said pressurizing pump;

said restricted orifice controlling the rate of product discharge therethrough so as to allow only a portion of the pressurized product to be dispensed from said pump during the pressurizing stroke, when pumping relatively rapidly, the remainder of said product being stored in said storage compartment means to be dispensed during the subsequent intake stroke of said first spring-loaded piston by contraction of said storage compartment means to maintain the stream or spray from the orifice when the pressurizing pump is receiving product on its intake stroke;

said storage compartment means including an outlet opening in communication with said outlet orifice, said outlet opening being disposed relative to said second spring-loaded piston so that it is opened and closed by movement of the second spring-loaded piston thereby completely controlling the flow to the restricted orifice;

said second piston moving upward to open said outlet opening and downward to close said outlet opening in the upright position of said pumping system;

the improvement wherein:

said first and second pistons are respectively biased by first and second spring means for operating said pistons and said second piston is coupled for movement with said first piston; and

said second spring means has an upper end engaging a stationary portion of said housing over said storage compartment means and a lower end engaging said second piston such that said second spring means exerts a relatively steady pressure on said second piston when product is being dispensed from said pumping system;

said second spring means extending during the pressurizing stroke of said first piston and cylinder assembly due to downward movement of said first piston when said pumping system is pumping air during priming of said pump to reduce the pressure of said second spring means on said second piston which moves upward to open said outlet opening and allows air to escape from said outlet orifice at low pressure for aiding in priming the pumping system.

4,225,061

FLUID DISPENSING DEVICE

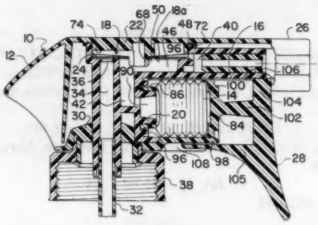
William S. Blake, Miami Lakes, and Walter H. Wesner, Plantation, both of Fla., assignors to The AFA Corporation, Miami Lakes, Fla.

Filed Dec. 19, 1977, Ser. No. 862,257
Int. Cl.[2] B65D *37/00*
U.S. Cl. 222—207 **21 Claims**

1. A valve housing for a fluid dispensing device including,

a body component having wall means defining the sidewall and lower surface of a cavity, said sidewall including means forming an outlet passageway connecting said cavity and an outlet nozzle, and said lower surface including means forming an inlet passageway connecting said cavity to a source of fluid product to be dispensed, a pump chamber passageway connecting said cavity to a pump chamber, and a passageway intersecting said pump chamber passageway and extending substantially from said inlet passageway to said sidewall adjacent said outlet passageway,

a cover for said cavity, said cover having interior surface means cooperating with said cavity lower surface to separate said inlet passageway from said outlet passageway and including depending wall means extending into said pump chamber passageway and defining a passageway therethrough connecting said pump chamber passageway to said inlet passageway, and



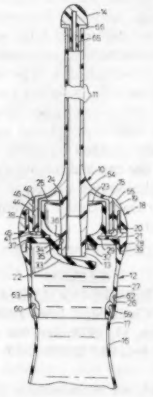
a pliable valve element clamped between said cover and said cavity lower surface, said valve element being imperforate except for an opening through which said depending wall means extend and having an inlet portion and an outlet portion each of which portions seals against an individually associated portion of said cavity lower surface to close said inlet passageway and said outlet passageway, respectively.

4,225,062

EXPANDING SYRINGE WITH FILLING VALVE

Vincent R. Sneider, 3422 Hallcrest Dr, Atlanta, Ga. 30319

Filed Dec. 7, 1978, Ser. No. 967,463
Int. Cl.[2] A61M *3/00*
U.S. Cl. 222—211 **18 Claims**



1. A combined filling and dispensing port for an expandable syringe unit comprising:

a hollow nozzle defining a hollow spray stem with an inlet portion, a head and a holder portion;

an expandable bag having a neck portion;

a housing defined by a detachable nozzle retainer portion providing a limited slide path for said nozzle holder portion;

a valve member defining a nozzle actuated portion and a filling portion having an orifice carried in said housing;

means to secure said neck portion of said bag to said housing; said inlet portion of said nozzle constructed and arranged in conjunction with said holder portion and said nozzle retainer portion slide path to be positioned through said filling orifice and to contact said nozzle actuated portion; whereby said nozzle retainer portion with said nozzle member can be detached from said valve member and a filling pipe or faucet head can be inserted into said filling orifice to fill said bag with a liquid and subsequently said nozzle retainer portion with said nozzle can be operatively positioned through said filling orifice and in contact with said nozzle actuated portion so movement of said nozzle holder portion over said slide path of said nozzle holder and in the direction of said bag will open said nozzle actuated portion and provide fluid communication with the liquid in said bag.

4,225,063

FLUID DISPENSING PUMP ASSEMBLY

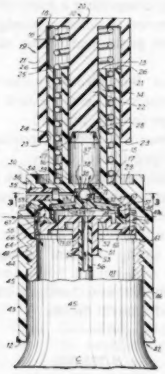
John E. Ayres, 540 Fairview Ave., Westwood, N.J.

Filed Jun. 10, 1977, Ser. No. 805,320

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.[2] **E05F** *9/043;* **F04B** *21/02*

U.S. Cl. 222—380 **5 Claims**



1. A fluid dispensing pump for use with fluids, or the like, comprising, in combination: a housing portion formed with an outlet port, said housing portion further containing a fluid chamber therein which communicates with said outlet port; conduit means communicating with said fluid chamber for conducting fluid from a reservoir to the fluid chamber; diaphragm means formed with an opening therethrough for controlling at predetermined pressures and flow characteristics the discharge of fluid through said outlet port, said opening being operatively disposed in a fluid path between said conduit means and said fluid chamber, said diaphragm means including a first valve portion integral therewith, said first valve portion initially obstructing said outlet port and being operably movable only in a substantially snap-like action between obstructing and non-obstructing positions; second valve means cooperative with and movable relative to said opening for controlling the flow of fluid therethrough; and actuating means for compressing the contents of said fluid chamber; said disphragm means comprising an upper rigid portion integral with said first valve portion, a lower rigid portion, and a relatively flexible portion connecting said upper and lower rigid portions and permitting said upper rigid portion to move in an over-center-type snap-like action with respect to said lower rigid portion and being responsive to the pressure within said fluid chamber and permitting the fluid to be discharged through said outlet port only upon said pressure reaching a minimum predetermined magnitude whereby substantially full atomization of the fluid dispensed is repeatedly realized, said flexible diaphragm means comprising a substantially frustro-conical shaped rigid material being flexible with substantially a snap action in response to minimum pressure forces thereon.

4,225,064

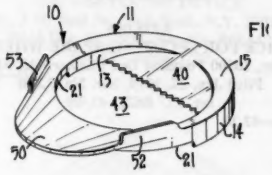
PAINTER'S ACCESSORY

Richard Westcott, 3200 Main Ave., Clear Lake, Iowa 50428

Filed Jan. 25, 1979, Ser. No. 6,349

Int. Cl.[2] **B65D** *5/74, 25/48*

U.S. Cl. 222—569 **2 Claims**



1. A can top accessory of at least slightly elastic material comprising an annular body having an axis and including an inner wall and an outer wall spaced by a generally radial interconnecting web from which said walls project in the same direction, said walls being defined by closed circular cylindrical surfaces and said outer wall being of greater axial extent than said inner wall, said inner wall being of substantially uniform axial extent and said outer being of substantially uniform axial extent except for a notch extending, in both directions from a predetermined axial location about said axis, around less than half the circumference of said outer wall, and said web defining the segment, of a circular cone having a large apex angle, between spaced truncating planes perpendicular to said axis;

a sealing ridge projecting toward said outer wall from said inner wall, spaced axially from said web and extending in both directions from said predetermined angular location around substantially half the circumference of said inner wall;

and a pouring lip comprising an outward radial extension of said web in said cone, of limited extent radially and of limited angular extent about said predetermined location.

4,225,065

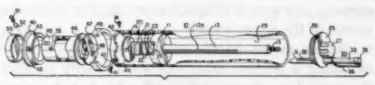
POWDER SPRAYER

George L. Brehm, Hilltown, Pa., assignor to B & G Equipment Company, Plumsteadville, Pa.

Filed Feb. 2, 1979, Ser. No. 9,237

Int. Cl.[3] **B05B** *11/02*

U.S. Cl. 222—631 **9 Claims**



1. A dispenser for powder comprising

a cylinder of non-corrosive material having a delivery end and a plunger receiving end and transverse members intermediate said ends providing a valve chamber with an air delivery valve member therein,

one of said transverse members having a tube with openings therethrough extending therefrom within said cylinder and toward the delivery end of said cylinder,

a rim at the plunger receiving end of said cylinder mounted in said cylinder providing an abutment,

a removable end closure for said delivery end of said cylin-

der having a powder delivery tube extending therethrough,

the space within said cylinder between said transverse members and said end closure constituting a powder chamber,

a hollow reciprocable plunger of non-corrosive material and of lesser diameter than said cylinder closed at its inner end and extending inwardly at the plunger receiving end of said cylinder and outwardly therebeyond and being slidable in said rim, and

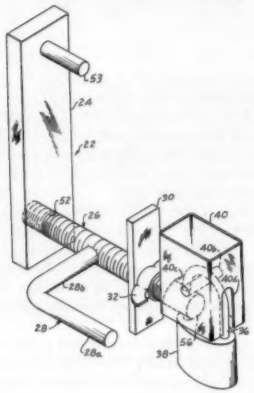
air inlet valve means carried by said plunger and limiting the outward movement of said plunger by engagement with said rim.

4,225,066

DEVICE FOR SECURING SPARE WHEELS

Rolla W. Barr, 16300 Fontaine Dr., Chesterfield, Mo. 63017

Filed Jan. 22, 1979, Ser. No. 5,310
Int. Cl.[2] B62D *43/08*
U.S. Cl. 224—42.24 **4 Claims**



1. Apparatus for securing a spare wheel engaged with a floor and a sidewall of a truck bed comprising:

a baseplate, said baseplate being removably mounted on the sidewall;

means for retaining the baseplate on one side of the sidewall, said means including first and second members attached to the baseplate, said first member extending from said baseplate for engagement with a top edge of the sidewall, said second member having a first end threaded into the baseplate on one side of the sidewall and extending therefrom through an opening in said sidewall and terminating at a second end on the other side of the sidewall for extending through a hub hole of an associated spare wheel, said opening being at a distance from the floor less than the radius of the spare wheel;

anti-rotating means fixedly secured to the second member including a portion extending substantially parallel with the second member and through a lug hole for anti-rotating engagement with the lug hole upon rotation of the second member;

means for retaining the spare on the second end of the second member, said means being a spanner member mounted on the second end being of a construction sufficient for engaging a rim of the hub hole; and

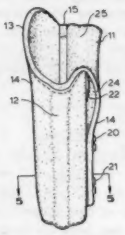
means for urging the spanner into abutting engagement with the spare, said means being a member threaded on the second end wherein the apparatus is easily removed from the sidewall of the trunk bed when not in use because there are no fasteners attaching the apparatus to the truck.

4,225,067

HOLSTER WITH CONTROLLABLE RESISTANCE TO DRAW

John E. Bianchi, and Richard D. E. Nichols, Fallbrook, both of Calif., assignors to Bianchi Leather Products, Inc., Temecula, Calif.

Filed Feb. 12, 1979, Ser. No. 11,419
Int. Cl.[3] A41F *00/00*
U.S. Cl. 224—243 **12 Claims**



1. A controllable resistance to draw holster comprising:

(a) a holster body comprising a piece of leather or leather-like material formed to define a handgun carrying cavity;

(b) movable means positioned within said handgun cavity; and

(c) control means for selectively moving said movable means to a greater or lesser extent into said handgun cavity to change the size thereof;

(d) said movable means including a portion bearing against a handgun positioned in said cavity;

(e) said control means being operable by the user to vary the resistance to movement of the handgun in the holster;

(f) wherein said movable means comprises a spring deflectable into said handgun cavity by said control means;

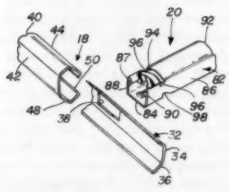
(g) wherein said spring is a leaf spring with one portion secured within said holster body and at least one free portion movable into said handgun cavity responsive to operation of said control means.

4,225,068

LUGGAGE RACK

Charles E. Ingram, 13703 Hendrick, Warren, Mich. 48089

Filed Sep. 28, 1978, Ser. No. 946,579
Int. Cl.[3] B60R *9/04*
U.S. Cl. 224—325 **5 Claims**



1. A luggage rack comprising:

a pair of spaced cross rails, each of said cross rails comprising an alignment member having a plurality of apertures and a cover member encompassing said alignment member;

a plurality of support members laterally disposed with respect to said cross rails and having opposite ends received by said apertures to connect said support members to said cross rails and to maintain said cross rails at a selected distance from each other;

each of the opposite ends of said support members having recessed sections, said recessed sections being parallel to the longitudinally extending edges of its associated alignment member; and

said cover members encompassing said alignment members and slidably engaging said recessed sections to lockingly secure said support members to said cross rails, whereby for assembly of the rack said cross rails are inserted into a respective one of said apertures in said alignment member and then said cover is slid on from one end of said alignment member sequentially and slidably engaging the recessed sections of each of said plurality of support members to lock the same together.

4,225,069

ARRANGEMENT FOR THE ACCOMMODATION OF WINTER SPORT EQUIPMENT OBJECTS ON A MOTOR VEHICLE ROOF

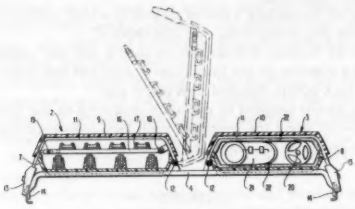
Werner Breitschwerdt, Stuttgart, and Andreas Langenbeck, Sindelfingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 28, 1978, Ser. No. 919,838

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729767

Int. Cl.[2] **B60R** *9/12*

U.S. Cl. 224—328 **10 Claims**



10. An arrangement for the accommodation of winter sports equipment on two carrier means secured on a roof of a motor vehicle, characterized in that two luggage-like container means disposed adjacent one another are arranged on the carrier means, of which one container means is provided on the inside with mounting support means for skis and is open at one side thereof while the other container means is constructed for receiving accessories, each of said container means comprising lower and upper shells connected together, said arrangement further comprising a mounting frame means having ski gripper means for the mounting of skis arranged in the upper shell of the container means, said mounting frame means being arranged so as to be pivoted out relative to the upper shell of said container means.

4,225,070

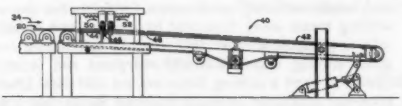
METHOD OF SIMULTANEOUSLY OPENING TWO SCORES TRANSVERSE TO ONE ANOTHER

John R. Dahlberg, Jeannette, and Robert P. DeTorre, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 9, 1979, Ser. No. 37,244

Int. Cl.[3] **C03B** *33/02*

U.S. Cl. 225—2 **10 Claims**



1. A method of simultaneously opening transverse scores imposed in a sheet of refractory material comprising the steps of:

imposing at least one first score and at least one second score in the sheet, the scores transverse to one another and the at least one first score having a depth greater than the at least second score; and

applying a bending moment force to the at least second score of sufficient magnitude to open the at least second score and open at least a portion of the at least first score by the shock resulting from opening the at least second score.

4,225,071

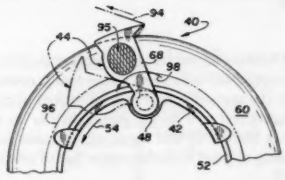
TAPE-SEVERING DEVICE

Don Laviano, 2 W. 46th St., New York, N.Y. 10036

Filed Dec. 11, 1978, Ser. No. 968,617

Int. Cl.[3] **B26F** *3/02*

U.S. Cl. 225—65 **2 Claims**



1. An improved tape-severing device of the type operatively mounted for sliding movement about a core supporting a supply length of tape put up in a roll, said tape-severing device comprising an arcuate shaped slide member operatively arranged to partake of said sliding movement along said core and having mounting openings in opposite sides thereof, a tape-severing body member presenting a tape-severing edge thereon and having bifurcated opposite legs extending in depending relation therefrom terminating in mounting projections facing each other, said tape-severing body member having an operative position disposed in straddling relation over said roll of tape with each said mounting projection thereof projected within and cooperating with one of said mounting openings so as to allow for rotative movement therebetween contributing to corresponding pivotal movement in said tape-severing body member relative to said roll of tape, and movement-binding means consisting of circumferentially spaced radially extending teeth on each said mounting projection and a surface bounding each said cooperating mounting opening of a selected construction material that binds upon physical contact with said teeth so as to allow pivotal movement in said tape-severing body member in only one selected direction, whereby as said supply of tape is payed out from said roll progressively diminishing the height thereof said tape-severing body member is nevertheless adapted to assume an operative position adjacent said roll of tape due to a pivotal movement therein and is effectively held in said operative position by said movement-binding means.

4,225,072

GLASS CUTTER FOR FRACTURING PRESCORED GLASS

Max D. Reeves, 1640 Candlelight Dr., Las Cruces, N. Mex. 88001

Filed Feb. 9, 1979, Ser. No. 10,950

Int. Cl.[3] **C03B** *33/02, 33/10*

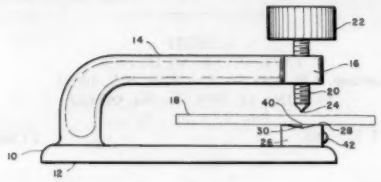
U.S. Cl. 225—104 **4 Claims**

1. A glass cutter for fracturing prescored glass, said cutter comprising:

a frame having an elongated base section and an elongated upper section having a first end attached to the first end of said base section and extending over said base section and

separated therefrom, said base section and said upper frame section forming a "C" shape;

an anvil positioned adjacent the second end of said elongated base and on the surface thereof facing said upper frame section, said anvil having a flat glass supporting surface and a channel of substantially uniform width and depth along the length of the center line of said glass supporting surface; and



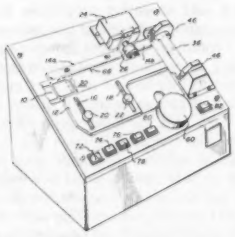
a threaded breaker screw having a breaker point on one end of its longitudinal axis, said screw being rotatably positioned in the second end of said elongated upper section, said longitudinal axis being perpendicular to said glass supporting surface of said anvil, said breaker point being substantially aligned with the center line of said channel in said anvil.

4,225,073

MULTIPLE SPEED WEB DRIVE SYSTEM

Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Apr. 28, 1977, Ser. No. 791,703
Int. Cl.³ B65H *17/26*
U.S. Cl. 226—49 **19 Claims**



1. In a photographic system, a web drive system comprising:

switch means having first and second states, the switch means normally having the first state and having the second state only while being operator actuated, the switch means returning to the first state when opertor actuation is removed; and

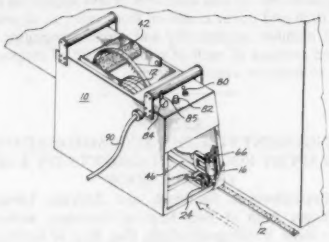
web drive means for driving the web a predetermined distance at a first rate during a first period in response to the switch means being switched from the first to the second state, discontinuing driving the web after the predetermined distance if operator actuation is removed during the first period causing the switch means to return to the first state, and driving the web at a second rate after the first period if operator actuation continues uninterrupted throughout the first period and thereafter so that the switch means remains in the second state continuously throughout the first period and thereafter.

4,225,074

CARPET TACK-STRIP INSTALLING MACHINE

Gerald D. Jacobson, Everett, Wash., assignor to J & L Machinery, Inc., Everett, Wash.

Filed Aug. 4, 1978, Ser. No. 931,198
Int. Cl.² B27F *7/02*
U.S. Cl. 227—2 **13 Claims**



1. A machine for installing carpet tack-strip onto a floor adjacent a wall, comprising:

a mobile frame adapted to be moved along the floor adjacent a wall; and, tack-strip handling means carried by said frame, including:

means for supporting a roll of tack-strip which includes tack points projecting from one side thereof;

means for feeding tack-strip from such a roll and guiding it into a position on the floor closely adjacent said wall with the tack-points directed upwardly; and

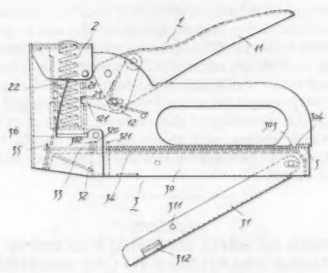
nailing means adapted to nail such tack-strip to the floor at intervals along the length of such tack-strip between the tack-points as the machine is being moved.

4,225,075

HOOK-NAIL AND ITS DRIVING MACHINE

Hui-Neng Chi, No. 17, La. 119, Ta-Teh St., Taichung, Taiwan

Filed Jan. 29, 1979, Ser. No. 7,555
Int. Cl.³ B25C *5/06*
U.S. Cl. 227—119 **6 Claims**



1. A driving machine for driving hook-nails comprising: a frame having a basal plane, said frame being open at the basal plane;

spring-energized striking means, operating perpendicularly to said basal plane, mounted at one end of said frame;

operating handle means, rotatably mounted on said frame, said handle including crank means for firstly moving said striking means away from said basal plane and secondly releasing said striking means, whereby said spring energized striking means is firstly energized and secondly caused to exert a striking force toward said basal plane;

a hook-nail magazine slidingly mounted inside said frame adjacent to said basal plane, with one end of said magazine between said striking means and the basal plane, wherein

hook-nails are sequentially disposed in overlapping relationship having nail-ends obliquely pointed toward the basal plane, the hooks being disposed obliquely substantially along said basal plane;

a basal structure, pivotally mounted to said frame at the frame end opposite the striking means, whereby the basal structure partially encloses said magazine, the basal structure defining an opening beneath the striking means, the opening being at least as large as the length of the hook-nail;

a check device, attached to the end of said magazine beneath the striking device, said check device enclosing the end of the magazine with a closing surface which is oblique to said basal plane, said check device being attached to the magazine so as to provide a transverse slot between the check device and the magazine beneath said striking means;

an impelling device, slidingly mounted within said magazine, the impelling device having a surface substantially conformally shaped to engage the outline of the hook-nail hook as the hook-nails are disposed in the magazine, the impelling device having a portion extending above the hook-nails on the side away from the basal plane, said extended portion having at least one hole with the hole axis parallel to the lengthwise direction of the magazine;

an impelling rod installed lengthwise of the magazine, said rod being attached to said check device, and passing through said at least one hole in said impelling device;

a compression spring, coaxially surrounding said impelling rod, whereby said impelling device is resiliently biased toward said check device;

a recovering spring attached to the frame at the end away from said striking means and attached to the end of said magazine which is not beneath said striking means, said recovering spring operating to resiliently bias said magazine toward the end of the frame away from said striking means; and

a driver affixed to said striking means and moving with said striking means, said driver extending obliquely toward said basal plane, parallel to said oblique surface on the check device and passing through said slot between said check device and said magazine, said driver having a slot extending in the direction of motion of the striking means, said impelling rod passing through said slot and retaining the driver, whereby the driver may move with respect to the rod, said oblique driver sliding on the oblique closing surface of the check device attached to said magazine, the magazine being thereby caused to slide with respect to the frame as the striking means moves perpendicularly toward or away from the basal plane, the magazine and affixed check device being biased against said driver by said recovering spring, the motion of said driver extending away from the basal plane sufficiently that the hook-nails within the magazine may be sequentially urged beneath the driver by the action of said impelling device and said impelling spring and the motion of the driver toward the basal plane causing the hook-nails to be obliquely driven from the driving machine in a direction parallel to the oblique surface of the check device through the opening defined by said basal structure.

4,225,076

DESOLDERER AND HEATER ASSEMBLY FOR USE THEREWITH

Kenneth C. Litt, Silver Spring, and Alexander J. Vella, Derwood, both of Md., assignors to Pace Incorporated, Silver Spring, Md.

Filed Aug. 18, 1978, Ser. No. 934,970
Int. Cl.³ B23K *3/02*
U.S. Cl. 228—20 **16 Claims**

1. A desolderer comprising

a tubular tip adapted for contacting a termination to be soldered;

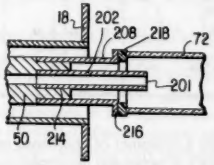
a heating element for heating said tip to a solder melting temperature;

a solder collection chamber;

a tubular solder transfer means for transferring solder from said tip to said solder collection chamber, said heating element heating said solder transfer means to said solder melting temperature along the entire length thereof so that said solder is ejected from said solder transfer means into the solder collection chamber in a molten state, the thermal characteristics of said solder transfer means being such that the rear portion thereof disposed adjacent said solder collection chamber is (a) maintained at a temperature less than that of said tip and (b) heated to said solder melting temperature after said tip reaches the solder melting temperature;

a tubular sleeve within which is mounted said heating element and said tubular solder transfer means;

said solder collection chamber being adapted for connection



to a vacuum source so that vacuum applied to said solder collection chamber causes molten solder to be drawn through said tip and said solder transfer tube into said solder collection chamber;

sealing means for sealing the forward end of said solder collection chamber to ensure the application of said vacuum to said solder transfer tube from said vacuum source through said solder collection chamber;

tubular seal mounting means providing a sealing surface for said sealing means for the forward end of the solder collection chamber, said sealing surface being removed from said solder transfer means; and

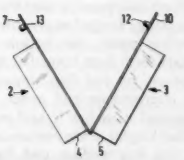
said tubular solder transfer means including (a) a tubular core, said tip being disposed at least within the forward portion of said tubular core, and (b) a solder transfer tube connected at a first surface to the rear portion of said tubular core, said tubular seal mounting means being connected to the rear portion of said tubular core at a second surface removed from said first surface.

4,225,077

CONTAINER FORMED FROM PLASTIC FOIL

Roland Veitinger, Panoramastrasse 70, 7310 Plochingen, Fed. Rep. of Germany

Filed Jun. 6, 1979, Ser. No. 46,070
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1978, 2825837
Int. Cl.³ B65D *1/26, 5/46*
U.S. Cl. 229—2.5 R **9 Claims**



1. A container formed from plastic foil, comprising: two

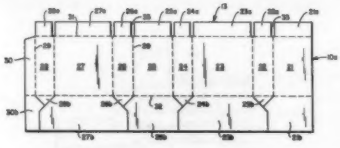
container portions having marginal areas; and, connecting parts formed in the marginal areas which can be inserted into one another, the connecting parts having top regions formed with deformable structure, such that after said insertion, the top regions of the inner connecting parts will expand in response to a common pressing-in of the top regions, the expanded structure pressably locking respective connecting parts together.

4,225,078

KNOCKED-DOWN POLYGONAL CONTAINER WITH SET-UP CONTOUR-FORMING FLAPS

Thomas E. Croley, Worthington, Ohio, assignor to Willamette Industries, Inc., Portland, Oreg.

Filed Jun. 1, 1979, Ser. No. 44,453
Int. Cl.³ B65D *5/08*
U.S. Cl. 229—41 C **11 Claims**



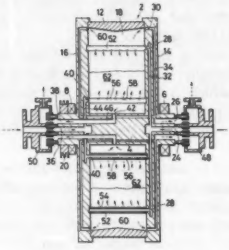
1. A blank for a container of fiberboard or the like comprising a tubular body of octagonal horizontal cross-section having eight upstanding wall panels connected together at vertical corners, and a bottom flap arrangement on the body including two inwardly extending horizontally disposed flaps connected at their outer edges to respective opposed wall panels and having their inner edges meeting, said flaps together being of the same cross-sectional area and contour as the tubular body of the container; said blank consisting of a flat sheet of fiberboard material cut, slit and scored to provide eight wall-forming panels including two side wall panels, two end wall panels and four connecting panels, connected hingedly together at laterally spaced, vertically extending score lines; and a bottom flap arrangement hinged on the lower side of said sheet along a common horizontal score line including two form flaps which are connected to said side wall panels, each of said form flaps being of hexagonal form and one-half the area and contour of the octagonal horizontal cross-section of the container body and having an edge hinged to its respective side wall panel and co-extensive therewith, an opposed edge of a length corresponding to the spacing of the end walls in the body of the container and space from the hinged edge a distance which is one-half the spacing of the side walls, in the body of the container and connecting end edges to engage and position the said end and connecting panels, each of said connecting end edges including a straight edge at a right angle to said outer edge of a length equal to one-half the width of an end panel and another edge extending angularly therefrom to said horizontal score line at the adjacent vertical score line; said two side panels having a connecting panel hinged respectively to one edge with an end panel hinged intermediate the two connecting panels at vertical score lines, one of the remaining connecting panels having one edge hinged at a vertical score line to the adjacent side panel to be outermost, the other connecting panel being hinged at vertical score lines intermediate the other end panel and the adjacent side panel so that the end panel is outermost, an attaching flange hinged at a vertical score line to the outermost connecting panel; the bottom flap arrangement consisting of the said form flaps hinged at the horizontal score line to the side panels, an end flap hinged at the horizontal score line to the intermediate end panel, a partial end flap hinged at the horizontal score line to said outermost end panel, and a partial end flap hinged at the horizontal score line to said attaching flange, said intermediate end flap having opposed angled edges extending outwardly from the horizontal hinge score line at adjacent vertical score lines and perpendicularly to the respective angled edges of the adjacent form flaps to provide triangular flaps therebetween which are hinged at the horizontal score line to the adjacent connecting panels, said outermost end flap having one such angular edge perpendicular to the adjacent angled edge of the form flap forming a triangular flap on the adjacent connecting panel, said partial end flap hinged to said attaching flange at said horizontal score line also having an angled edge extending from the adjacent vertical hinge score line and at a right angle to the angled edge of the adjacent form flap to produce a triangular flap hinged at the horizontal score line on the adjacent outermost connecting panel.

4,225,079

LIQUID-LIQUID CENTRIFUGAL EXTRACTOR

Shoji Yoshinaga; Hirosige Kawano; Matsuzo Todo, and Kiyoshi Fujiwara, all of Yamaguchi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1978, Ser. No. 965,349
Claims priority, application Japan, Dec. 2, 1977, 52-143907; Apr. 19, 1978, 53-45369
Int. Cl.² B04B *5/06*
U.S. Cl. 233—15 **20 Claims**



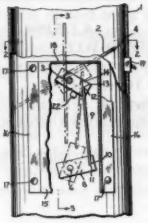
1. In a liquid-liquid centrifugal extractor wherein a liquid of greater specific gravity is introduced into an inner peripheral portion inside a rotor, while a liquid of smaller specific gravity is introduced into an outer peripheral portion, and the two liquids are brought into direct contact by exploiting the difference of the specific gravities thereof, to move an extract contained in one of the liquids into the other liquid, the liquid-liquid centrifugal extractor further comprising:

a plurality of liquid distributing means disposed in the outer peripheral portion and the inner peripheral portion inside the rotor, each of the means disposed on the outer peripheral side is provided with a plurality of holes which are open facing the inner peripheral side, while each of the means disposed on the inner peripheral side is provided with a plurality of holes which are open facing the outer peripheral side, so that the liquid of greater specific gravity spouts into the interior of said rotor from said holes of said means disposed on the inner peripheral side, passes among said means disposed on the outer peripheral side and migrates further outwards, while the liquid of smaller specific gravity spouts into the interior of said rotor from said holes of said means disposed on the outer peripheral side, passes among said means disposed on the inner peripheral side and migrates further inwards, said rotor defining in its interior a chamber that is substantially free of any solid elements, except for said distributing means, that would materially deflect or constrain the free movement of the liquids within said chamber.

4,225,080
DAMPER CONSTRUCTION FOR A GAS FIRED COMBUSTION APPARATUS

James T. Barth, Wisconsin Rapids, Wis., assignor to Barth, Inc., Wisconsin Rapids, Wis.

Filed Jul. 7, 1978, Ser. No. 922,780
Int. Cl.[3] G05D *23/00*; F23N *1/00*
U.S. Cl. 236—1 G 4 Claims



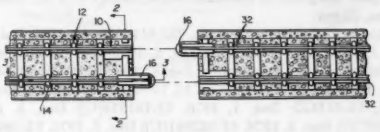
1. A thermally responsive damper for a gas fired combustion apparatus, comprising a stack connected to the combustion apparatus and adapted to conduct waste gases of combustion, a damper disposed within the stack, means for mounting the damper for pivotal movement with respect to the stack, said damper having a generally elliptical configuration and being pivotable from an inclined closed position where the damper is located at an acute angle with respect to the axis of the stack to an open position where the damper is located generally parallel to the axis of the stack, said damper when in the closed position having a high end and a low end, vent means disposed in the high end of said damper adjacent the stack to provide a vent for said gases when the damper is closed, thermally responsive means disposed in the stack upstream of the damper and responsive to a predetermined temperature in said stack, a linkage operably connecting the thermally responsive means and said damper whereby an increase of temperature to said predetermined temperature will actuate said thermally responsive means and operate said linkage to move the damper from the closed to the open position, and a thermally responsive safety mechanism including a resettable switch disposed immediately upstream of the high end of said damper and located adjacent said vent means, whereby the inclined closed position of the damper causes the gases of combustion to flow toward the vent means adjacent the safety mechanism to enable the safety mechanism to sense the temperature of the gases of combustion, said safety mechanism being responsive to a predetermined temperature in said stack and being operably connected to said combustion apparatus whereby an increase in temperature in said stack due to a failure of the damper to open when the combustion apparatus is operating will actuate said safety mechanism to shut off operation of the combustion apparatus.

4,225,081
METALLIC JOINT FOR MODEL RAILROAD RAILS

Osamu Ikegame, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan

Filed Jul. 15, 1976, Ser. No. 705,549
Claims priority, application Japan, Jul. 29, 1975, 50-105680[U]
Int. Cl.[3] A63H *19/30*
U.S. Cl. 238—10 E 2 Claims

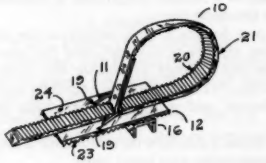
1. In a trackway having a plurality of sections each provided with a base, a plurality of supports extending upwardly from said base, extending transversely thereof, and spaced apart from each other, and rails mounted to said supports and extending longitudinally along said base, each of said rails having a bottom portion resting on said supports and a top portion extending upwardly therefrom, the improvement comprising a system for connecting the end portions of adjacent of said rails of adjacent sections, comprising joints, each of said joints having top, bottom and interconnecting side portions, said top portion being provided with a slot extending longitudinally therealong through which said top portions of adjacent of said rails extend, said bottom portion and said side portions encompassing said bottom portions of adjacent of said rails, said bottom portion furthermore being provided at one end thereof with a cut-out section extending downwardly therefrom defining a pawl, said supports at the ends of each section of said trackway having portions extending upwardly from said base distances corresponding to the distances the remainder of said supports extend upwardly from said base defining cavities between said supports at the ends of said section and the adjacent of said supports, such that said pawls of said joints abut said supports at the ends of each section until sufficient pressure is applied thereto at which time said pawls pass over said supports at the ends of each section eventually becoming locked between said supports at the ends of each section and the adjacent of the remainder of said supports, said supports at the ends of each section extending only partially transversely across said base and being arranged on opposite sides of each of said sections such that the ends of said joints opposite said pawls can be freely slid along said rails without contacting said supports at the ends of each section into abutment against the adjacent of the remainder of said supports.



4,225,082
LOW COST VEHICLE TRACTION DEVICE EMPLOYING PIVOTALLY MOUNTED ANCHORING MEANS

Thorvald G. Granryd, 825 N. Sheridan Rd., Lake Forest, Ill. 60045

Filed Feb. 5, 1979, Ser. No. 253
Int. Cl.[3] E01B *23/00*
U.S. Cl. 238—14 11 Claims



1. A device for providing a traction surface under the drive wheel of a vehicle comprising

frame means adapted to be positioned adjacent to drive wheel of a vehicle,

said frame means including gripping means to anchor said frame means to the surface supporting the drive wheel of the vehicle, said frame means further including mounting means disposed vertically above said gripping means,

elongated flexible traction means having a first end portion pivotally coupled to said mounting means,

said elongated flexible traction means having a second end portion adapted to be positioned adjacent the drive wheel of the vehicle between the drive wheel and said frame means,

said elongated flexible traction means being looped past said gripping means and said mounting means during positioning of said second end portion adjacent the drive wheel, and

said elongated flexible traction means forming a traction surface as said end portion is drawn beneath the drive wheel of the vehicle during rotation thereof while said first end portion is anchored against movement by said frame means.

4,225,083

APPARATUS FOR APPLYING REFRACTORY MATERIAL ONTO THE INNER SURFACE OF A FURNACE

Sueki Kubo; Toshiro Watanabe; Masayuki Fujita; Tadahiko Matsuno, all of Kitakyushu, and Akira Morita, Ibaragi, all of Japan, assignors to Kurosaki Refractories Co., Ltd., Kitakyushu, Japan

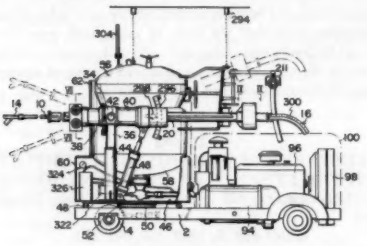
Continuation-in-part of Ser. No. 788,941, Apr. 19, 1977, Pat. No. 4,120,260. This application Jun. 5, 1978, Ser. No. 912,903

Claims priority, application Japan, Apr. 19, 1976, 51-44759; Nov. 12, 1976, 51-136733; Nov. 16, 1976, 51-154018[U]; Nov. 24, 1976, 51-141422; Dec. 1, 1976, 51-161518[U]; Dec. 3, 1976, 51-145757; Dec. 3, 1976, 51-162941[U]; Dec. 8, 1976, 51-148048; Dec. 23, 1976, 51-173401[U]; Jan. 20, 1977, 52-6182[U]; Feb. 7, 1977, 52-12679; Feb. 15, 1977, 52-17727[U]; Mar. 28, 1977, 52-38147[U]

The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.

Int. Cl.[2] B05B *3/12, 15/00*

U.S. Cl. 239—132.3 **4 Claims**



1. An apparatus for applying a refractory material onto the inner surface of a furnace comprising in combination:

a mobile transport car;

a spray pipe having a spray nozzle at one end thereof for spraying refractory material onto the inner surface of a furnace and adapted to receive the refractory material from a supply of the refractory material adjacent the other end thereof, said spray pipe comprising inner and outer pipes;

support means positioned on said mobile transport car pivotably supporting said spray pipe;

storage means mounted on said mobile transport car for storing at least a supply of refractory material therein, said storage means comprising a first tank for the storage of refractory material and a second tank for storage of water;

said outer pipe including a pipe cooling means which comprises an inlet opening formed in the wall of said outer pipe and a cooling water supply tube connected between said water storage tank and said inlet opening in said outer pipe;

means carried by said transport car for supplying the refractory material to said spray pipe from said storage means and for propelling the refractory material through said spray pipe and spray nozzle, said refractory material supply means comprising a flexible hose connected between the other end of said spray pipe and said refractory material storage tank, said flexible hose being connected at said other end of said spray pipe to said inner pipe;

a water outlet formed in said outer pipe and a warm water return tube connected between the water outlet of said outer pipe and said flexible hose; and

a selected number of water-regulating means each of which includes an orifice plate, said water-regulating means being disposed in parallel relation at an intermediate location in said warm water return tube, and each of said water-regulating means including a solenoid valve adapted to selectively control the flow of water through the associated orifice plate to thereby provide control of water warmed by said cooling means to said flexible hose supplying refractory material to said spray pipe.

4,225,084

ROTARY ATOMIZER WITH ASYMMETRICAL TEETH

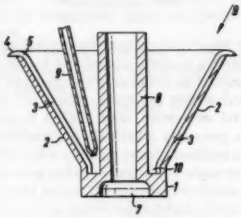
Edward J. Bals, Bromyard, England, assignor to Pennbrook Corporation, Far Hills, N.J.

Filed Sep. 14, 1978, Ser. No. 942,158

Claims priority, application United Kingdom, Sep. 14, 1977, 38250/77

Int. Cl.[2] B05B *3/02*

U.S. Cl. 239—223 **9 Claims**



1. A rotary atomiser comprising:

a hollow cone having a base at its narrow end and a peripheral edge at its wide end, and adapted to be rotated about its central axis;

a plurality of teeth on the peripheral edge of said cone; and

a plurality of radial grooves on the inner surface of said cone for directing streams of liquid to be atomised outwardly to said teeth where they are broken up into droplets of substantially uniform size;

each of said teeth comprising a radially disposed face and a nonradial face disposed at an angle to said radial face.

4,225,085

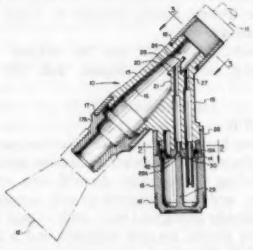
SHOWER HEAD DISPENSER

James J. Headen, 1602 216th Ave. SE., Issaquah, Wash. 98027; Warren D. Abbott, Jr., 9964 Tanglevine, Dallas, Tex. 75238, and Clifton G. Hampton, Euless, Tex., assignors to James J. Headen, Issaquah, Wash. and Warren D. Abbott, Jr., Dallas, Tex.

Filed Mar. 29, 1979, Ser. No. 24,883

Int. Cl.[3] B05B *7/30*

U.S. Cl. 239—317 **17 Claims**



1. A shower head dispenser for bath oil or the like comprising:

a body member having an axial bore therethrough, said body member being adapted for insertion in a shower system between a shower line and a shower head;

a constriction in said bore;

a first transverse bore in said body member extending from said constriction to a point on the exterior of said body member;

a valve seat formed at the exterior end of said first transverse bore;

a second transverse bore in said body member extending from a point in said axial bore upstream from said constriction to a point on the exterior of said body member;

fitting means on said body member encircling the exterior ends of said bores; and

an oil container detachably engaged with said fitting means, said container carrying a valve member movable toward engagement with said valve seat upon movement of said container toward attachment and away from said valve seat upon movement of said container toward detachment.

4,225,086

METHOD AND A DEVICE FOR ADDING MATERIAL IN AN AIR STREAM TO A NOZZLE

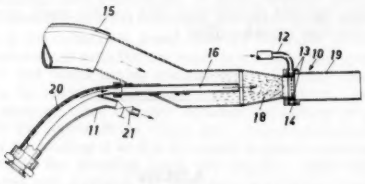
Bertil Sandell, Länsmansvägen 21, Hovas, Sweden (430 80)

Filed Oct. 14, 1977, Ser. No. 842,307

Claims priority, application Sweden, Oct. 26, 1976, 7611844

Int. Cl.[2] B05B *7/04*

U.S. Cl. 239—428 **2 Claims**



1. Apparatus for manufacturing fiber reinforced concrete by mixing a stream of airborn concrete material with a stream of airborn reinforcing fibers, said apparatus comprising a nozzle assembly including:

a first pipe for carrying one of said streams;

a convergent mixing chamber leading from and having a junction with said first pipe;

a nozzle means leading from a discharge end of said mixing chamber;

a second pipe leading into said first pipe for carrying the other of said streams, said second pipe including a socket portion extending substantially axially through said first pipe, said socket portion terminating in a discharge end disposed substantially at the junction between said first pipe and said mixing chamber, and further including a curved portion located upstream of said socket portion, the curved portion having larger and smaller radii such that material of greater mass in said other stream is flung by centrifugal force substantially along said larger radius while material of lesser mass in said other stream is directed substantially along said smaller radius;

a discharge conduit leading from said smaller radius of said curved portion of said second pipe; and

valve means disposed in said discharge conduit for controlling outflow of material of lesser mass in said other stream from said second pipe through said discharge conduit.

4,225,087

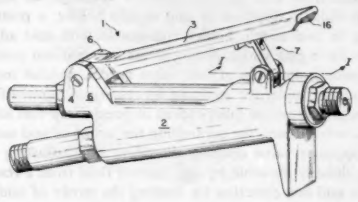
LOCK-OFF MEANS FOR AIRLESS SPRAYER

Christopher Lawlor, North Ridgeville, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Feb. 22, 1977, Ser. No. 770,563

Int. Cl.[3] B05B *7/02*

U.S. Cl. 239—526 **3 Claims**



1. In an airless spray gun of the type having a nozzle including hand-grip means for manually grasping the nozzle and associated trigger means for actuating a gun spraying mecahnism by pivotal movement of the trigger means toward the hand-grip means, the improvement comprising manually disengageable lock means for automatically preventing actuating movement of said trigger means including a rigid locking member spring-biased and disposed for automatic operative interposition between said hand-grip and trigger means upon full release of said trigger means, said rigid locking member comprising a rigid arm locking member pivotally engaged at one end thereof with said hand-grip means so that the distal end thereof bears against said trigger means and spring-biased so that said rigid arm locking member is urged toward an operative position obstructing actuating movement of said trigger means as said trigger means moves away from said hand-grip means, said lock means further including track means disposed on said trigger means for receiving and guiding the distal end of said rigid arm locking member, and said rigid arm locking member including bearing means on the distal end thereof for facilitating travel of the rigid arm locking member within said track means.

4,225,088

FUEL INJECTION NOZZLE

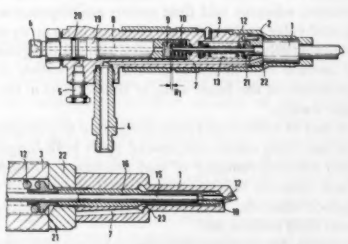
Günter Kulke, Esslingen, and Konrad Eckert, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 886,311

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711391

Int. Cl.[2] F02M *45/00*

U.S. Cl. 239—533.5 **7 Claims**



1. A fuel injection nozzle for internal combustion engines comprising, in combination, a nozzle holder, a nozzle body having a plurality of injection openings, conduit means for

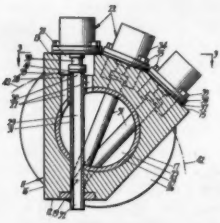
supplying pressurized fuel to said nozzle body, a valve needle slidably disposed in said nozzle body, means in said nozzle holder for urging said valve needle in one direction for closing engagement with said injection openings, said valve needle being slidably movable in the opposite valve opening direction throughout a stroke determined by the pressure of said pressurized fuel supplied by said supplying means to vary the cross-sectional flow area of said injection openings, an adjusting piston slidably disposed in said nozzle holder, a positioning spring in said nozzle holder engageable with said adjusting piston for urging said adjusting piston into said rest position in the opening direction of said valve needle, conduit means in said nozzle holder for applying a pressurized control fluid to said adjusting piston independent of pressurized fuel supplied to said nozzle body for controlling the stroke of said needle in said opposite valve opening direction, said adjusting piston being slidably movable by said control fluid from a rest position in said one direction for limiting the stroke of said valve needle and therefore the cross-sectional flow area of said injection openings.

4,225,089

FLUID FLOW MANIFOLD

Alan M. Stone, Briar Hill, Australia, assignor to Sphere Investments Limited, Nassau, The Bahamas

Filed Oct. 26, 1978, Ser. No. 954,915
Claims priority, application Australia, Nov. 11, 1977, PD2381
Int. Cl.[3] B05B *1/14*
U.S. Cl. 239—562 **9 Claims**



1. A fluid flow manifold having at one side a plurality of fluid outlets and at an opposing side a plurality of valve outlet ports each connected to one of the fluid outlets by a respective outlet duct, wherein: said fluid outlets are disposed in a linear array; said valve outlet ports are disposed in an array spreading circumferentially and longitudinally over an imaginary cylindrical surface curved about an axis of curvature extending longitudinally of the linear array of fluid outlets in the vicinity of those outlets;

each pair of valve outlet ports connected to a successive pair of said fluid outlets are spaced apart both longitudinally and circumferentially of said imaginary cylindrical surface, whereby they are spaced apart at a distance which is greater than the distance between said successive pair of said fluid outlets; and

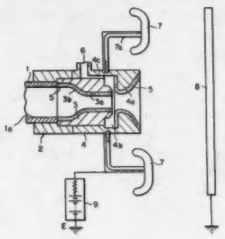
said outlet ducts extend from the valve outlet ports radially of said imaginary cylindrical surface so as to converge into a linear array defining the fluid outlets such that the lengths of all outlet ducts between the valve outlet ports and the fluid outlets are substantially equal.

4,225,090

DEVICE FOR PAINTING BY ELECTROSTATIC POWDER SPRAYING

Hiroyoshi Kako, Aichi, and Nobuo Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 7, 1979, Ser. No. 73,494
Int. Cl.[3] B05B *5/00*
U.S. Cl. 239—692 **4 Claims**



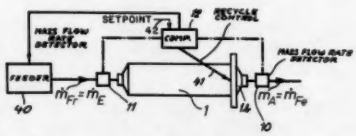
1. A device for painting by electrostatical powder spraying, which device comprises: a powder supply member having a passage formed therein for supplying powder, a housing connected to said supply member and having a passage formed therein, a polymeric insulator surrounding said passage, said electric insulator containing an electrically conductive powder dispersed therein and being formed in a thin layer and grounded, whereby a current of frictional electricity is formed in said electric insulator layer by friction between said powder and said insulator layer as said powder passes through said passage and said powder from said powder supply member is continuously triboelectrified.

4,225,091

METHOD OF AND APPARATUS FOR THE MILLING OF SOLIDS

Klaus Steier, Munich, Fed. Rep. of Germany, assignor to Babcock Krauss-Maffei Industrieanlagen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,493
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807691
Int. Cl.[3] B02C *25/00*
U.S. Cl. 241—24 **10 Claims**



1. A method of regulating the fineness of a first product produced by a through-flow milling installation of the continuous open-circuit type wherein said milling installation includes a continuous mill having an inlet for material to be milled and an outlet for discharging said product, said method comprising the steps of measuring the mass flow rate of the milled product from said outlet and controlling said mass flow rate of said mill selectively by feedback and outlet control so that the outputted mass flow rate is substantially constant with time.

4,225,092
ANNULAR GRINDING MILL

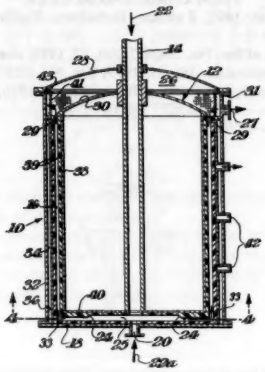
Frank A. Matter, Buchs, and Hans E. Brunner, Birr-Lupfig, both of Switzerland, assignors to Microprocess Ltd., Buchs, Switzerland

Filed Sep. 6, 1978, Ser. No. 939,995

Claims priority, application Switzerland, Nov. 22, 1977, 14233/77

Int. Cl.³ B02C *23/36*

U.S. Cl. 241—46 B **12 Claims**



1. A grinding mill for reducing the size of particles of material in a fluidized suspension form by forceful interaction with a particulate grinding medium, comprising a cylindrical vessel having smooth internal side walls, a cylindrical rotor having a smooth external side wall, the cylindrical rotor being closely inserted in the cylindrical vessel whereby a narrow annular gap is disposed between the side walls of the rotor and vessel, the rotor and vessel having circular bottoms, rotary means mounting the rotor concentrically with the cylindrical vessel with a pumping space disposed between the bottom of the rotor and the bottom of the vessel, drive means connected to the rotor for rotating it within the vessel, impeller means disposed within the pumping space, the impeller means being constructed and arranged for generating a positive forceful flow of slurry from the pumping space up through the annular gap whereby the grinding medium and particles being ground are substantially prevented from dropping downwardly from the gap into the pumping space and the ground particles are carried upwardly through the gap, and the impeller means comprises a circular array of pumping vanes on the bottom of the rotor disposed within the pumping space.

4,225,093
ROLLING MILL FOR MILLING CEREALS AND SIMILAR MATERIAL

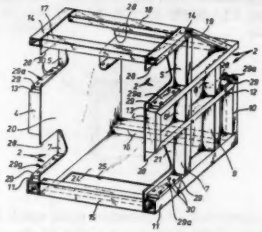
Friedrich-Wilhelm Rüsch; Johannes Gärtner, both of Brunswick, and Walter Faist, Vechelde, all of Fed. Rep. of Germany, assignors to Buehler-Miag GmbH, Brunswick, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 878,919, Feb. 17, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,526

Int. Cl.³ B02C *4/28*

U.S. Cl. 241—76 **10 Claims**

1. A rolling mill for milling cereals and similar material comprising three roll units, each including two rollers and bearings mounting said rollers rotatably about parallel axes; housing means provided with three outwardly open receiving means for frontal insertion of said roll units and for supporting the latter after the insertion, said receiving means being arranged in said housing means vertically spaced from each other, with one of said receiving means located between the uppermost and the lowermost receiving means also laterally spaced from said uppermost and said lowermost receiving means, said one receiving means having an open end at one side of the housing means and the other two receiving means having open ends at the other side of said housing means; inlet means for passing the material to be milled into the gap between the rollers of the uppermost roll unit; outlet means for discharging the milled material located below the lowermost of said roll units; and treatment means extending transversely through said housing means for sifting the material between successive roll units.



4,225,094
SLURRYING APPARATUS INCLUDING GRINDING AND SEPARATING MEANS

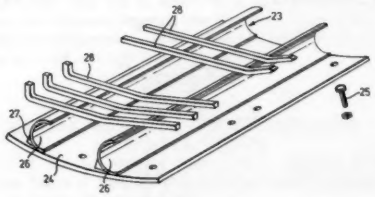
Jacob T. Halldorson, 53 Flagstone Crescent, St. Albert, Alberta, and Rene Bureaud, 6508 - 109B Ave., Edmonton, Alberta, both of Canada

Filed Jan. 25, 1979, Ser. No. 6,810

Claims priority, application United Kingdom, May 30, 1978, 3914/78

Int. Cl.³ B02C *17/06, 17/22*

U.S. Cl. 241—79 **14 Claims**



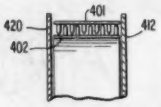
1. A slurrying apparatus comprising a rotatable drum arranged for rotation about its longitudinal axis and including a slurrying chamber portion so arranged that when said drum is rotated, feed material passes from an inlet of said slurrying chamber portion to a discharge portion of said drum wherein slurry and fine particles are separated from coarser particles and are discharged separately, said slurrying chamber portion including means for grinding or pulverizing solid particles, said slurrying chamber portion being lined with a plurality of liner assemblies each including one or more scoops extending substantially parallel to the longitudinal axis of said drum, said scoops supporting one or more comminuting bars extending substantially transversely to said scoops and arranged to form a grid spaced inwardly from the internal surface of the drum, and means for causing rotation of said drum.

4,225,095

ROLLED NAIL STRIPS PACKED WITHOUT SPOOLS

J. Calvin Jureit, Coral Gables; Andrew G. Seipos, Miami, and William J. Langevin, North Miami Beach, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Division of Ser. No. 833,059, Sep. 14, 1977, Pat. No. 4,129,933.
This application Jun. 28, 1978, Ser. No. 920,128
Int. Cl.[3] B65D *85/675, 85/671, 85/24*
U.S. Cl. 242—1 1 Claim



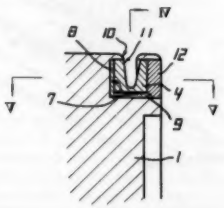
1. A coiled composite of connector plate stock from which may be cut sheet metal connector plates of the type having integrally struck teeth projecting therefrom comprising: first and second coiled lengths of connector plate stock in juxtaposition and said teeth of each said length of connector stock being essentially completely intermeshed with said teeth of the other said length of connector stock so that outer surfaces of said composite of connector stock have no teeth projecting therefrom; said first and second coiled lengths being free of any winding spool and said first and second lengths being engaged in said coil composite such that at least a portion of said second length forms the innermost portion of the coiled composite and conforms to the configuration of a hub on which said coiled composite is formed, said first length of connector stock lies on the portion of said second length which has achieved the configuration defined by such hub, and the relationship between said first and second lengths remain the same throughout the wound coiled composite so that there is no jamming between the intermeshing teeth of said first and second lengths.

4,225,096

GROOVED TRAVERSE DRUM FOR USE IN DRUM WINDER

Masao Mino, Yao, Japan, assignor to Kabushiki Kaisha Mino Seisakusho, Osaka, Japan

Filed Jun. 5, 1979, Ser. No. 45,836
Claims priority, application Japan, Jul. 3, 1978, 53-81345
Int. Cl.[3] B65H *54/48*
U.S. Cl. 242—43.2 3 Claims



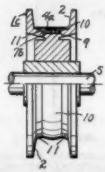
1. A grooved traverse drum construction comprising a cylindrical drum body and a plurality of abrasion-resistant members, said drum body having a spiral yarn guide groove formed in the peripheral surface of the cylindrical drum body, said yarn guide groove having a traverse end at each end of the drum body, with each traverse end having a bottom, an axially inward lateral side wall, and an opposed spaced outward lateral side wall, said inward wall having an upper portion near the drum surface, said drum body having apertures extending into each end and intersecting the bottom of the lateral side walls of each traverse end of the yarn guide groove, said abrasion-resistant members being inserted in the apertures, each abrasion-resistant member comprising a body portion and a recess portion having oppositely spaced side walls and a bottom groove portion centrally positioned in said body portion, a portion of one of said recess portion side walls being flush with said upper portion of said inward side wall of said traverse end of said yarn guide groove, and the remaining portion of said one of said recess portion side walls and said bottom groove portion extending away from said inward side wall and said bottom of said traverse end, respectively.

4,225,097

FILM CARRYING ROLLER

Ryuji Ohtomo, 1691, 2 chome, Ikebukuro, Toshimaku, Tokyo 171, Japan

Continuation of Ser. No. 704,617, Jul. 12, 1976, abandoned. This application Jul. 31, 1979, Ser. No. 62,575
Claims priority, application Japan, Apr. 8, 1976, 51-42667
Int. Cl.[3] B65H *75/20*
U.S. Cl. 242—55.01 4 Claims



1. A device for carrying connected films of different widths, said device comprising:

a roller having an outer periphery with an annular groove formed therein, said groove being defined by a groove bottom and by axially spaced side walls, and an annular recess formed at the axial central portion of said bottom of said groove, said recess being defined by first and second axially spaced, substantially radially extending end walls and by a substantially axially extending bottom wall;

an annular elastic tire positioned within said recess, said tire having a radially outer annular convex surface extending axially continuously from said first end wall of said recess to said second end wall of said recess; and

said groove bottom further including inclined annular surfaces positioned on opposite axial sides of said recess, each said inclined annular surface extending radially and axially outwardly from a respective end wall of said recess and from a respective axial end of said convex surface of said tire to a respective side wall of said groove, the radially outermost portions of said inclined annular surface being positioned further radially outward than the radially outwardmost peak of said convex surface of said tire.

4,225,098

TAPE TRANSPORT APPARATUS

Herbert Henkler, Battenberg; Manfred Gehrung, Ludwigshafen, and Eduard Rasek, Wiesloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 29, 1978, Ser. No. 937,721
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738898; Jan. 18, 1978, 2801936
Int. Cl.[3] G11B *15/32*
U.S. Cl. 242—192 25 Claims

1. A tape transport apparatus having

a tape driving capstan which is rotatably mounted on a fixed shaft and has a resiliently deformable peripheral portion,

means for driving said capstain,

a take-up pack and a supply pack each mounted for rotation on a respective shaft,

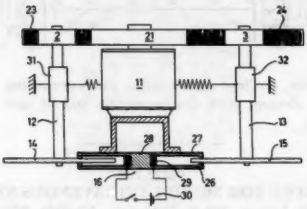
means mounting said packs for movement towards and from said capstan,

contact pressure generating means for biasing said shafts

towards said capstan so that the outermost tape turn of each tape pack is drivingly contacted by the capstan,

said pressure generating means including braking means for varying the bias,

said braking means comprising brake elements on the shafts carrying said tape packs and at least one magnetic system



having a relatively stationary line of symmetry parallel to the shafts of said tape packs,

said brake elements and said magnetic system being disposed so that said elements extend into the magnetic field of said magnetic system by an amount depending on the momentary diameter of the respective tape pack.

4,225,099

TAPE TRANSPORT MECHANISM

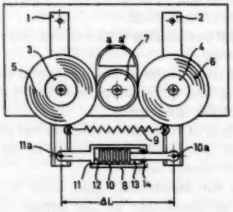
Klaus Schoettle, Heidelberg; Helmut Lewin, Bobenheim-Roxheim; Werner Hoffmann; Peter Dobler, both of Ludwigshafen, and Lothar Gliniorz, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Lugwigshafen, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,636

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1977, 2749735

Int. Cl.³ G11B *15/32*

U.S. Cl. 242—192 **12 Claims**



1. A tape transport apparatus comprising:

a drive capstan,

take-up and supply reels rotatably supported on respective reel carriers,

two mounting means which mount the respective reel carriers for movement relatively to said capstan, and

a combination of pressure means and mechanical shock actuated coupling means, so connected between said two mounting means that said pressure means are normally effective to yieldingly urge said mounting means toward each other and hence said reels toward said capstan,

said coupling means being responsive to exposure to said apparatus to mechanical shock for rendering the connection between said mounting means relatively unyielding.

4,225,100

TAPE CASSETTE

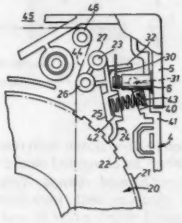
Kokichi Sugawara, Tagajo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,304

Claims priority, application Japan, Mar. 23, 1978, 53-36147[U]; Dec. 29, 1978, 53-181914[U]

Int. Cl.³ G11B *23/10*

U.S. Cl. 242—198 **15 Claims**



1. A tape cassette comprising a cassette casing; at least one reel which, upon assembly of the cassette, is disposed inside said cassette casing, and upon which a tape is wound, said reel having a flange with a toothed marginal portion at a predetermined radial distance from the axis of said reel; a respective brake member associated with said at least one reel and pivotally mounted in said cassette, said brake member having a brake lever engageable with said toothed marginal portion for preventing said tape reel from rotating; means for urging said brake lever away from said toothed marginal portion to permit rotation of said reel; a helical compression spring having a predetermined uncompressed axial length; and retaining means for said spring including means defining a first seat for one end of said spring on said brake member and means within said casing defining a second seat for the other end of said spring at a distance from said first seat, said distance between the first and second seats being less than said uncompressed axial length of the spring when said brake lever engages said toothed marginal portion of the reel flange so that said spring engaging, at its opposite ends, with said first and second seats is axially compressed to normally urge said brake lever against said toothed marginal portion, said brake lever being free to swing closer to said axis of the reel than said predetermined radial distance when said reel is absent from said casing so as to increase said distance between the first and second seats beyond said uncompressed axial length of said spring for facilitating the entry of said spring between said seats.

4,225,101

AIRCRAFT EJECTION SYSTEM COLLISION AVOIDANCE SYSTEM

Herbert R. Brown, Monroe County, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

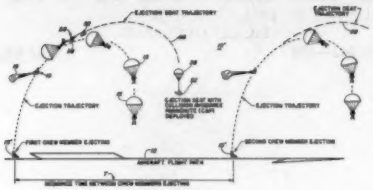
Filed Jan. 9, 1979, Ser. No. 2,163

Int. Cl.³ B64D *25/10*

U.S. Cl. 244—122 AE **3 Claims**

1. In combination with an ejection seat system, for use in an aircraft emergency ejection system, wherein the crewmember parachute is deployed prior to seat separation; wherein a crewmember survival kit is stowed in the seat and is adapted to be secured to the crewmember and wherein the crewmember parachute aids in separating the crewmember from the ejection seat; a seat retardation parachute system, comprising: an ejection seat parachute including a parachute canopy; means for securing the parachute canopy to the ejection seat; means adapted to be connected to the crewmember and the ejection seat parachute, for deploying the ejection seat parachute after separation of the crewmember from the ejection seat; said means for deploying the ejection seat parachute including a

folding flap member attached to the crewmember survival kit on the side remote from the side adapted to be positioned adjacent the crewmember, releasable means for holding said flap member in its folded condition; said flap member, after



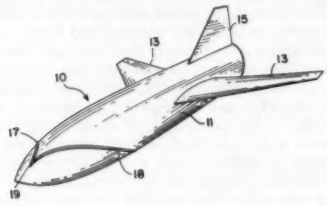
release, being adapted to drop down with one side adjacent the legs of the crewmember; an elongated sleeve on the side of the flap adapted to be positioned remote from the legs of the crewmember; said ejection seat parachute canopy being stowed in said elongated sleeve prior to seat separation.

4,225,102

AERODYNAMIC SIDE-FORCE ALLEVIATOR MEANS

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and Dhanvada M. Rao, Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 12, 1979, Ser. No. 19,541
Int. Cl.[3] B64C *1/00, 21/00*
U.S. Cl. 244—130 **6 Claims**



1. In combination; an aerodynamic body having a pointed forebody and a relatively long, slender, cylindrical afterbody, and means for alleviating abrupt and out-of-plane aerodynamic loads on the aerodynamic body during high angles of attack flight; said means consisting of a symmetrical pair of ridges disposed on the pointed forebody and starting on the upper surface of said forebody near but spaced from the nose tip thereof and diverging along separate helical paths along the circumference of said forebody.

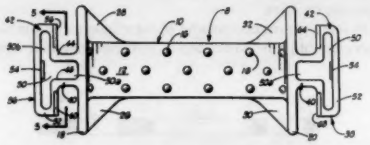
4,225,103

PIPE CLAMP DEVICE

Harold T. Pate, Cleveland, Ohio, assignor to Indian Head Inc., New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,482
Int. Cl.[3] F16H *3/08*
U.S. Cl. 248—74 B **27 Claims**

1. A pipe clamp device comprising:
an elongated flexible strap having a first side, a second side, a pair of opposed side edges, and a pair of opposite ends; and
a pair of tee subassemblies connected to the opposite ends of the strap and each including:
a crossarm element having a tool-receiving slot therethrough in alignment with the longitudinal axis of said elongated strap for facilitating the twisting of said crossarm element about the longitudinal axis by means of a leverage tool inserted into said slot; and



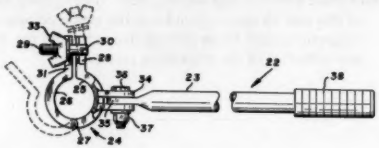
a flexible, resilient neck portion interconnecting the crossarm element with the respective end of said elongated strap.

4,225,104

HANDLE FOR MOBILE INTRAVENOUS STAND

Godfrey R. Larson, 316 N. Fifth Ave., Virginia, Minn. 55792

Filed Nov. 20, 1978, Ser. No. 962,288
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—125 **6 Claims**



1. A mobile stand for supporting suspended inverted containers of liquid for intravenous administration to patients, said stand comprising:
(A) a base having casters in the under surface thereof,
(B) a vertical standard secured to said base,
(C) a liquid container holder adapted for engagement with said vertical standard and having a generally horizontal container-supporting cross bar,
(D) means for rigidly securing said container holder and said standard, and
(E) a handle for propelling and steering said stand, said handle rigidly engaging the standard and comprising:
(1) an elongated tiller bar or rod,
(2) a tube or pipe clamp rigidly secured to the vertical standard of said stand,
(3) a pivotal connection between one end of said tiller and said clamp,
(a) the axis of rotation of said pivotal connection intersecting and being perpendicular to the longitudinal axis of the tiller, and
(b) the axis of rotation of said pivotal connection being spaced from and perpendicular to the center line axis of said clamp, and
(4) means for maintaining said tiller in a first position rigidly perpendicular to the center line axis of said clamp and permitting said tiller to be moved to a second position generally parallel to the center line axis of the clamp.

4,225,105

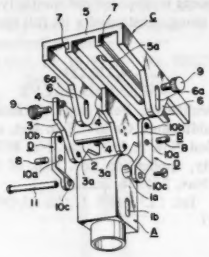
TILT MOUNTING

Toyosaku Nakamura, Tokyo, Japan, assignor to Mitsuwa Photo Industry Co. Ltd., Tokyo, Japan

Filed Oct. 31, 1978, Ser. No. 956,100
Int. Cl.[2] F16M *11/10*
U.S. Cl. 248—185 **8 Claims**

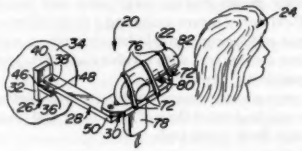
1. A tilt mounting, comprising in combination:
(a) a base member (A);
(b) a pivoted frame (B), pivotally carried by said base member (A);

(c) a receptacle (C) slidably held by said pivoted frame (B);
(d) a pair of supporting rods (D) with ends and intermediate portions, pivoted at said intermediate portions to said pivoted frame (B) and supported at their respective ends



by said base member (A) and by said receptacle (C), so that said receptacle slides back and forth in response to the turning of said pivoted frame; and,
(e) fixing means for fixing said receptacle (C) at any desired angular position.

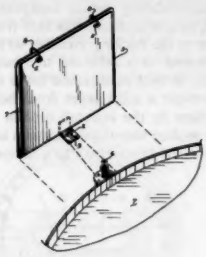
4,225,106
HAIR DRYER HOLDER
Joseph J. Eplan, 15083 London Rd., Philadelphia, Pa. 19116
Filed Nov. 22, 1978, Ser. No. 962,863
Int. Cl.[2] A47F 5/00
U.S. Cl. 248—309 R **4 Claims**



1. Apparatus for supporting a hand-held electrical hair drier having a hand-grip portion from which an elongated barrel portion extends, said apparatus comprising a support arranged for securement on a vertical member, an arm pivotly connected to said support and having an end in the form of an elongated holder, said arm being pivotable about a vertical axis to move said holder to various positions in a horizontal plane, said holder comprising a base having a free end, said base having an elongated slot therein adapted to receive the hand-grip portion of said hair drier, the free end of said base including yoke means comprising a pair of upstanding legs forming a cradle therebetween in which the barrel portion of said hair drier is disposed when said hand-grip is in said opening.

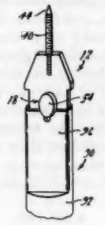
4,225,107
MUSIC HOLDER FOR DRUM
Kenneth R. Gleason, 316 E. Lake St., Rockwell City, Iowa 50579
Filed May 9, 1977, Ser. No. 795,077
Int. Cl.[3] G10G 5/00
U.S. Cl. 248—443 **1 Claim**

1. A music holder for a drum including a tension rod having a threaded shaft and an enlarged head, said music holder comprising:
a sheet music supporting frame, and an angled, one-piece support arm of sheet material attached to one end thereof to said frame, said support arm having an elongated slot formed in the other end of said support arm for receiving the shaft of said tnesion rod, and a recessed area formed in the upper surface of said support arm around the inner end of said slot for receiving the enlarged head of said tension



rod as said tension rod is tightened, thereby firmly securing said music holder upon said drum.

4,225,108
DISPLAY HANGER AND METHOD OF INSTALLATION THEREFOR
Ralph J. Jaroche, Wolverine, Mich., assignor to The Stroh Brewery Company, Detroit, Mich.
Filed Jan. 29, 1979, Ser. No. 7,292
Int. Cl.[3] F16M 13/00
U.S. Cl. 248—544 **8 Claims**



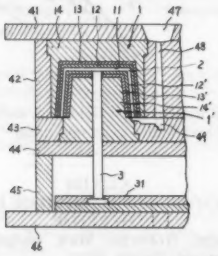
1. A display hanger assembly comprising:
a hanger member having an opening therein;
attachment means secured to said hanger member and adapted to enable said hanger member to be secured to a portion of a building structure;
a removable pin member receivable within said opening and having a shank portion and opposite enlarged diameter end portions, said removable pin member supportingly engaging portions of said hanger member so as to enable a display to be suspended from said pin member.

4,225,109
INSULATED METAL MOLD
Akira Yotsutsuji; Seiichi Ueda, both of Nara, and Hiroyuki Iwami, Hirakata, all of Japan, assignors to Osaka City & Taiyo Manufacturing Works Co., Ltd., Japan
Filed Jul. 6, 1978, Ser. No. 922,310
Int. Cl.[3] B22D 15/00; B28D 7/36; B29C 1/04
U.S. Cl. 249—111 **5 Claims**

1. An insulated metal mold comprising a molding surface defining the cavity of a mold for high pressure injection molding thermoplastic resin and having a metal layer providing the molding surface, a metal backing member, and a layer of heat-insulating means sandwiched between the metal layer and the backing member, wherein:
(a) said metal layer has a thickness of approximately 0.001 mm to 3 mm so that the injected molten thermoplastic

resin rapidly heats the metal layer to a temperature sufficient to prevent a solid layer from being formed by the injected molten thermoplastic resin on the cavity surface,

(b) said heat-insulating means comprises a thermosetting resin composition and controls heat transmission from the metal layer to the backing member so that when the metal layer is heated to a selected temperature, the selected temperature is first maintained for a sufficient period of time to prevent a solid layer from being formed on the cavity surface by the injected molten resin during injection of the molten thermoplastic resin into the cavity, after which the metal layer cools to a temperature sufficiently



to solidify the molten thermoplastic resin within a predetermined time after filling the mold cavity therewith, and

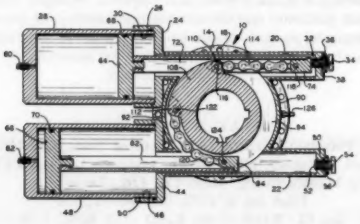
(c) said heat-insulating means comprises at least one member selected from the group consisting of inorganic filler, metal powder filler, and fibrous filler; the inorganic filler consisting of a powder of at least one material selected from the group consisting of glass, silica, calcium carbonate, talc, clay and alumina, the metal powder filler consisting of a powder of at least one metal selected from the group consisting of aluminum, aluminum alloy, copper and copper alloy; and the fibrous filler consisting of at least one material selected from the group consisting of glass fiber, carbon fiber, asbestos fiber and whisker.

4,225,110

ACTUATOR FOR CONVERTING LINEAR TO ROTARY MOTION

Neil H. Akkerman, Kingwood, Tex.; Stephen R. Foster, New Orleans, La., and Gonzalo Vazquez, Houston, Tex., assignors to Baker GAC Inc., Belle Chasse, La.

Filed Sep. 27, 1978, Ser. No. 946,233
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—58 **15 Claims**



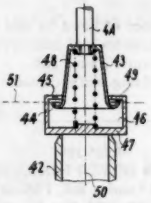
1. An actuator for converting linear to rotary motion, comprising: a rotor rotatable about an axis; a pair of motor assemblies having reciprocable push rods translatable along spaced apart axes; and flexible means coupled between a point on each push rod of each of said motor assemblies and at least one fixed point on said rotor for transferring energy therebetween, said flexible means moveable between a first position wherein one of said means is disposed substantially parallel to one of said push rods along substantially its full length and the other of said means is disposed adjacent the periphery of said rotor along at least a portion of its length and a second position wherein said one of said means is disposed adjacent the periphery of said rotor along at least a portion of its length and the other of said means is disposed substantially parallel to one of said push rods along substantially its full length.

4,225,111

SOLENOID VALVE

Kurt Stähle, Neuhausen, Fed. Rep. of Germany, assignor to Corcordia Fluidtechnik GmbH, Fed. Rep. of Germany

Filed Nov. 2, 1977, Ser. No. 847,810
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1976, 2650393; Nov. 3, 1976, 2650394
Int. Cl.³ F16K *31/10, 25/00*
U.S. Cl. 251—87 **3 Claims**



1. Solenoid valve apparatus comprising:
valve chamber housing means,
fluid inlet means opening into said housing means,
fluid outlet means leading away from said housing means, said fluid outlet means including a fluid outlet stub having an open end facing into said housing means, said open end forming a valve seat with a valve seat sealing edge around the periphery thereof,
sealing engagement means selectively engageable with said valve seat to control flow of fluid from said housing means into said fluid outlet stub,
plunger means,
plunger moving means for forcibly moving said plunger in a predetermined path with respect to said valve seat,
connecting means interposed between said plunger means and said sealing element means for moving said sealing element means in dependence on the position of the plunger means,
and compression spring means interposed between said sealing element means and one of said housing means and said plunger means for biasing said sealing element means in the direction of the valve seat,
wherein said connecting means includes abutment means engageable with said sealing element means for effecting initial movement of only one side of said sealing element means away from said valve seat during opening of said valve, whereby the forces required to be applied by said plunger moving means are minimized due to the aid of a pressure build up on said sealing element means upon said initial movement of said only one side,
wherein the sealing element means is an elastic plate part of an elastic cap articulated with an open end to the plunger means, said elastic plate part being held against the plunger means by fastening elements, said fastening elements projecting at at least one point on a circumferential edge of the elastic plate part from the plane extending radially to the axis of the plunger means in the direction of the plunger means, wherein other points of attachment of the fastening elements are disposed on an edge of the elastic plate part, and
wherein the fastening elements are made in the form of a ring

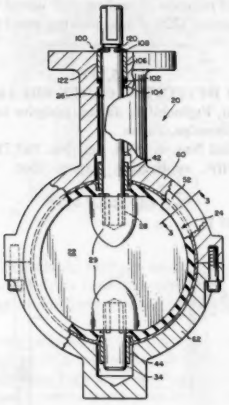
which grips behind a bead at the edge of the cap, said ring being bent outward and upward toward the plunger means at a point.

4,225,112

BUTTERFLY VALVE WITH A RETAINING RING

Albert W. Libke, Royalton, Minn., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 19, 1978, Ser. No. 952,750
Int. Cl.³ F16K 1/22
U.S. Cl. 251—214 **3 Claims**



1. A butterfly valve comprising:
a disc having a hub and adapted to be rotated between an open and a closed position;
a housing having a valve seat adapted to engage said disc in said closed position;
a shaft having one end affixed to said hub and extending outwardly of said housing to permit torque to be transmitted to said disc from a point external thereof;
a seal for preventing fluid from passing between said shaft and said housing;
a bearing for supporting said shaft in said housing, said bearing being at a location where said shaft extends outwardly of said housing,
a retaining ring frictionally engaging said shaft and abutting said bearing to ensure that fluid leading along said shaft does not eject said bearing and cause injury or loss of fluid, and
said shaft having an annular groove formed therein adjacent but outside of said retaining ring whereby, if said retainer ring were to slide axially along said shaft, said retaining ring would seat itself in said groove to prevent further axial movement.

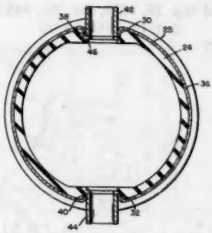
4,225,113

BUTTERFLY VALVE HAVING CARTRIDGE CONSTRUCTION WITH IMPROVED BEARINGS

Paul J. Barthelemy, Sauk Rapids; Dale R. Clausing, Sartell; Albert W. Libke, Royalton, and Donald R. Trott, St. Cloud, all of Minn., assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 19, 1978, Ser. No. 952,751
Int. Cl.³ F16K 1/22
U.S. Cl. 251—306 **10 Claims**

1. A butterfly valve comprising:
a disc adapted to be rotated between an open and a closed position;
a valve seat made of resilient material, and adapted to engage said disc in said closed position; said valve seat having an outer wall surrounding said disc, said outer wall having an aperture therein;
a shaft having one end affixed to said disc and extending outwardly therefrom through said aperture;
a ring surrounding said valve seat and permanently affixed thereto for preventing deformation of said outer wall of said valve seat, said ring being made of material that is much stronger and more rigid than said valve seat, said



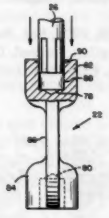
ring further including an integral cylindrical curved lip extending inwardly from the ring and defining an aperture therein, said aperture being aligned with the aperture in said valve seat wall, said lip projecting into said aperture in said valve seat wall; and
a cylindrical collar surrounding said shaft and solely supported at one end within said cylindrical lip, whereby said lip supports said collar and said collar and said lip comprises a self-aligning bearing for said shaft.

4,225,114

BUTTERFLY VALVE WITH IMPROVED SHAFT CONNECTION

Paul J. Barthelemy, Sauk Rapids; Dale R. Clausing, Sartell; Albert W. Libke, Royalton, and Donald R. Trott, St. Cloud, all of Minn., assignors to General Signal Corporation, Stamford, Conn.

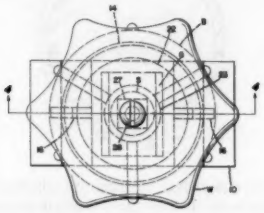
Filed Oct. 19, 1978, Ser. No. 952,752
Int. Cl.³ F16K 1/22
U.S. Cl. 251—308 **12 Claims**



1. A butterfly valve comprising:
a disc having a hub and adapted to be rotated between an open and a closed position;
a valve seat adapted to engage said disc in said closed position; and
a shaft having one end pressed into a bore of said hub and extending outwardly therefrom to permit torque to be transmitted to said disc from a point external thereof, said one end of said shaft including a plurality of splines for securing said shaft to said hub, each of said splines having a circular outer periphery coaxial with the bore and interfering with said hub by a maximum radial dimension of 0.030 inches greater than the radius of the bore, and said hub having a hoop stress that is less than 20,000 pounds per square inch after the shaft is pressed into the bore of

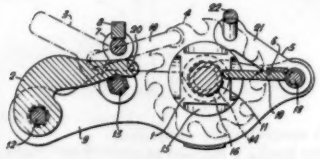
the hub, and each spline having a length approximately one and one-half times the diameter of the shaft and a width from approximately one-quarter to approximately one-third the diameter of the shaft.

4,225,115
GATE VALVE
Don R. Miller, Ashland, Ohio, assignor to U-Brand Corporation, Ashland, Ohio
Filed Sep. 25, 1978, Ser. No. 945,791
Int. Cl.³ F16K *3/12*
U.S. Cl. 251—327 **2 Claims**



1. In a gate valve of the character described, a plastic valve body having a flow passage extending horizontally through said valve body, said body having downwardly convergent valve seat surfaces extending transversely of the axis of said horizontal flow passage and inclined at an angle to said axis, said surfaces being flat and being devoid of sealing beads projecting from said surfaces, and a plastic gate having substantially oppositely disposed downwardly convergent surfaces lying in planes extending transversely of the axis of said flow passage and parallel with the planes of said valve seat surfaces, said gate surfaces having sealing beads of elliptical configuration molded integrally with said gate and projecting outwardly from said gate surfaces and adapted for sealing engagement with said valve seat surfaces.

4,225,116
CHAIN TENSIONER
Reijo Laine, Rauma, Finland, assignor to Lapela Oy, Rauma, Finland
Filed Oct. 10, 1978, Ser. No. 949,638
Claims priority, application Finland, Oct. 10, 1977, 772973
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—247 **4 Claims**



1. In a device for tensioning a chain comprising a frame (9), a ratchet wheel (4) mounted to said frame on a ratchet wheel shaft (11), said ratchet wheel adapted for turning by means of an operating lever (3) and a push pawl (10) fastened to said lever, a chain wheel (1) mounted on said ratchet wheel shaft (11) with said ratchet wheel (4) and turnable together with said ratchet wheel, and a locking pawl (5) having a component (22) for engaging said ratchet wheel teeth, by means of which backwards movement of said ratchet wheel can be prevented, the improvement comprising:

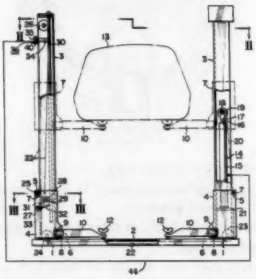
a traverse fastening shaft (13) of said operating lever (3) passing through said operating lever and said frame at a longitudinal distance from said ratchet wheel shaft (11);

an instant-release lock (2) fastened to said frame (9) at a fastening end, said lock adapted to receive a fastening link;

said lock including a locking loop (7) mounted to said frame on a locking loop shaft (13) and a locking pin (2) mounted to said frame on a locking pin shaft (12), whereby an outer end of said locking pin can be arranged inside said locking loop; and

said locking pawl (5) being mounted on a locking pawl shaft (18) at an opposite end of the frame (9) from said fastening end, said locking pawl shaft (18) being located in the direction of rotation of said ratchet wheel with respect to said component (22) of said locking pawl (5).

4,225,117
DEVICE FOR DETECTING CABLE BREAKS IN A LIFT
Yasunori Suzuki, Fujinomiya, Japan, assignor to Yasui Sangyo Co. Ltd., Fujinomiya, Japan
Filed Nov. 6, 1978, Ser. No. 957,716
Claims priority, application Japan, Dec. 10, 1977, 52-166337[U]
Int. Cl.³ B66F *7/20*
U.S. Cl. 254—89 H **3 Claims**



1. In a lift comprising a vertical mast and a carraige which is hoisted up and down the mast by at least one cable which is attached to the carriage, a safety device mounted to the mast, comprising:

(a) a push member comprising a spring metal member which is urged towards the cable so as to press sideways against it, whereby the push member moves sideways if the cable slackens; and

(b) a safety switch comprising:

(i) an actuating rod which can slide to and fro, said actuating rod having an annular grove around the axis thereof, and

(ii) a microswitch including an actuator which, in the non-actuated position, is in engagement with the annular groove of said activating rod, said actuating rod being positioned so that when the cable becomes slack the push member in its movement sideways actuates the switch

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4,225,118
DIRECT DRIVE DECK WINCH
William C. Ottemann, San Carlos, Calif., assignor to Barient Company, San Carlos, Calif.
Filed Nov. 20, 1978, Ser. No. 962,246
Int. Cl.³ B66D *1/30*
U.S. Cl. 254—333 **11 Claims**

1. A direct drive winch for a rope, including in combination:

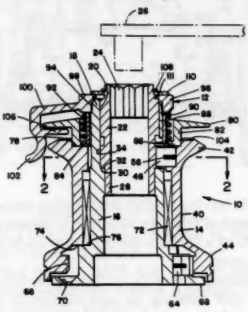
a stationary base member having a lower portion adapted to be attached to a flat surface and an upper portion whose longitudinal axis is parallel to the axis of said base member and an arcuate opening in said upper portion;

a rotary input shaft rotatably supported within said base member and having a series of circumferentially spaced-apart notches on its outer surface located at the same level as said arcuate opening;

a rotary drum rotatably supported by said base member;

bearing means between said rotary drum and said base member;

a series of movable driving pawls supported within said



drum and extendable through said opening in said base member as said drum rotates around it;

and self tailing means fixed to the upper portion of said base member;

whereby at least one said driving pawl is in contact with one notch of said shaft in the driving direction, each said pawl moving said drum for a portion of one revolution before it is disengaged from the notch and moved out of said opening.

4,225,119

CONTINUOUS WINCH

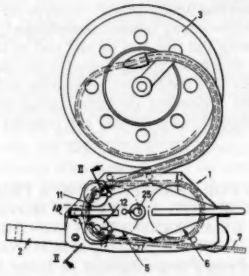
Egon Frommherz, Steinen, Fed. Rep. of Germany, assignor to Rotzler GmbH & Co. Spezialfabrik für Seilwinden und Hebezeuge, Steinen, Fed. Rep. of Germany

Filed Aug. 28, 1978, Ser. No. 937,417

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739423

Int. Cl.[3] B66D *1/76*

U.S. Cl. 254—175.7 **10 Claims**



1. A continuous winch, which includes: two wheels at least one of which is adapted to be driven and provided with a run-off groove for the non-loaded cable section and having a semi-arc of said wheels to be looped around by a running-off cable, and clamping means associated with said run-off groove for clamping the cable section in the run-off groove in a direction transverse to the running off direction of said cable section, said clamping means comprising a clamping wheel forming one lateral and movable confining wall of said run-off groove and being spring-loaded in clamping direction substantially merely on that semi-arc of said wheel which is to be looped around by the running off cable.

4,225,120

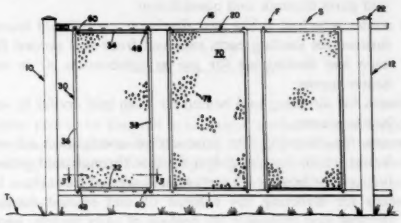
MULTI-SECTION FENCE

Robert M. McLaughlin, 1 Mellin St., Burlington, Mass. 01803

Filed May 1, 1979, Ser. No. 34,964

Int. Cl.[2] E04H *17/16*

U.S. Cl. 256—24 **11 Claims**



1. A multi-section fence with each section comprising:

a pair of fence posts;

a pair of hollow vertically spaced horizontal rails connected to said posts and each having a plurality of locking pin holes defined therein and a plurality of lug receiving holes defined therein;

a plurality of panel members, each including a multi-perforated panel and a panel frame, said panel frame including a pair of vertical frame members and a pair of horizontal frame members;

panel member connecting means connecting each of said panel members to said rails and including a lug on said panel frame, said lug extending into the interior of one of said rails through one of said lug receiving holes and having a locking pin receiving hole defined therethrough which is aligned with one of said rail locking pin holes, a plurality of locking pins each extending through said aligned rail and lug locking pin receiving holes, said locking pin having a bifurcated tip which is snugly received in said lug locking pin receiving hole, and a plurality of second lugs on said panel member received in a plurality of second holes defined in said rails.

4,225,121

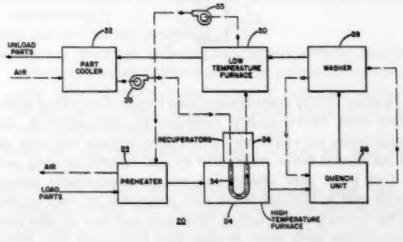
ENERGY EFFICIENT HEAT-TREATING FURNACE SYSTEM

Robert W. Meyer, Novi, and Charles G. Lippert, Pinckney, both of Mich., assignors to Holcroft, Livonia, Mich.

Filed Mar. 23, 1979, Ser. No. 23,225

Int. Cl.[3] C21D *1/62, 9/00*

U.S. Cl. 266—130 **13 Claims**



1. A furnace system for heat-treating parts comprising:

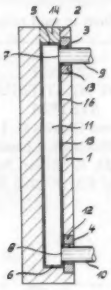
a first furnace;
a preheater for heating parts prior to entry of the parts into said first furnace;
heater means for heating parts to a predetermined temperature in said first furnace;
a quench unit connected to the part discharge end of said first furnace, said quench unit containing a quench medium for rapidly lowering the temperature of parts received from said first furnace;
a second furnace for heating parts to a lower temperature than said predetermined temperature following passage of said parts through said quench unit;
a cooler attached to the part discharge end of said second furnace for cooling parts received from said second furnace and heating air for use as combustion air in said heater means;
means for directing said heated air from said cooler to said heater means;
means for directing the products of combustion of said heater means from said first furnace through said second furnace for heating of parts in said second furnace;
means for directing the exhaust of said second furnace through said preheater for heating of parts therein; and
transport means for moving said parts successively through said preheater, said first furnace, said quench unit, said second furnace, and said cooler.

4,225,122

DEVICE FOR COOLING PLATE COOLERS OF BLAST FURNACES

Rolf Dörling, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Apr. 5, 1978, Ser. No. 893,774
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715390
Int. Cl.³ C21B 7/10
U.S. Cl. 266—193 **2 Claims**



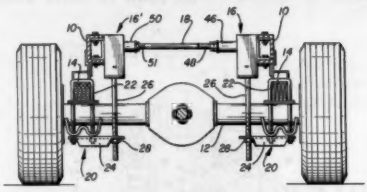
1. A plate cooler comprising a cast segment provided with a cooling pipe exchangeably arranged in said segment, said segment being provided with a first bore housing said pipe and with additional bores transverse to and communicating with said first bore, pipe connecting means respectively passing through said additional bores and connected to said cooling pipe for conveying a cooling fluid into and out of said pipe, means closing both ends of said first bore, and ring means surrounding said pipe connecting means where the latter pass through said additional bores.

4,225,123

SNUBBER ASSEMBLY FOR MOTOR HOMES

Fred W. Hefren, P.O. Box 551, Arkansas City, Kans. 67005

Filed Jan. 16, 1979, Ser. No. 3,890
Int. Cl.² F16F 3/02
U.S. Cl. 267—28 **2 Claims**



1. In a vehicle having spaced-apart spring means by which a chassis is suspended from an axle, the combination with said chassis and axle of a snubber assembly for each of said spaced apart spring means;
each said snubber assembly includes a housing, means for attaching said housing to said chassis at spaced apart locations such that said housing is vertically positioned at a location which is above the axle; an upper housing cover at the upper end of said housing, a top spring retainer means, a spring compression rod having opposed ends with one end thereof being affixed to said top spring retainer means; a lower housing cover having a central aperture, a lower spring retainer supported on said lower housing cover; a spring contained within said housing and having one end bearing against said top spring retainer means and the other end bearing against the lower spring retainer;
said spring compression rod has a marginal length thereof which reciprocatingly extends through said aperture in said lower housing cover;
and further including a center rod means directly interconnecting two of said housings only to one another for maintaining the housings in spaced relationship respective to one another;
said lower spring retainer includes an upwardly directed skirt member affixed thereto telescopingly received within a lower marginal end of the spring;
a bushing means concentrically arranged respective to said aperture and located between said skirt member and said compression rod which slidably receives the compression rod in a reciprocating manner therethrough;
means attaching the free end of said rod to said axle, and means by which the spring compression rod can be adjusted to pre-load the compression spring within the housing, thereby preloading the main springs of the vehicle and enhancing driving stability and comfort.

4,225,124

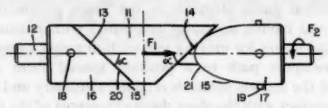
MECHANISM FOR TRANSFORMING A TRANSLATION MOVEMENT INTO A ROTATION MOVEMENT FOLLOWED BY A TRANSLATION MOVEMENT, AND APPLICATIONS OF THE MECHANISM

Mirko Pollak, Paris, France, assignor to Tobler S.A., Montrouge, France

Filed Feb. 7, 1978, Ser. No. 876,036
Int. Cl.² F16H 25/08; B25B 5/08
U.S. Cl. 269—234 **7 Claims**

1. A mechanism for transforming a translation movement into a rotation movement followed by a translation movement, said mechanism comprising a smooth shaft, a first member slidably mounted on said shaft, said first member being constituted by a hollow cylinder coaxial with said shaft, and having two end faces which are planar and symmetrical and form an angle of inclination with respect to said shaft, and a second

member fixed to said shaft and constituted by two cylinders coaxial with said shaft, each cylinder of the second member having a planar face of the same inclination with respect to said shaft as said end faces of the first member, each planar face of



the cylinders of the second member facing a respective inclined planar face of the first member for contacting the same, said two planar faces of the hollow cylinders member being angularly offset with respect to one another.

4,225,125

OPERATION TABLE

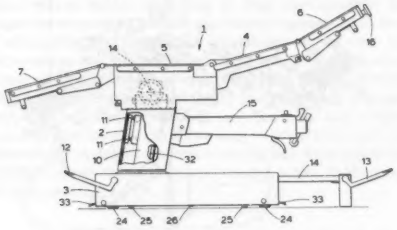
Norman J. Lee, London, England, assignor to Matburn (Holdings) Limited, London, England

Filed Apr. 24, 1978, Ser. No. 899,106

Claims priority, application United Kingdom, Apr. 28, 1977, 17768/77; Apr. 29, 1977, 17973/77

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—322 **5 Claims**



1. A surgical operation table or the like comprising a patient supporting surface, a movable base and a column by which the patient supporting surface is mounted on the base, wherein the said base comprises a plurality of feet which can rest on the ground to support the base in a fixed position and running wheels on which the base can be moved, and a support frame displaceable with respect to the base to move the running wheels into the position in which they are engaged with the ground and the feet are clear of the ground, said running wheels being connected to said support frame, a plurality of casters or the like mounted on the support frame, wherein the frame is displaceable with respect to the base from a position in which the running wheels are engaged with the ground and the feet are clear of the ground through a position in which the casters or the like are engaged with the ground and both the feet and the running wheels are clear of the ground to a position in which the feet are engaged with the ground and the casters and running wheels are clear of the ground.

4,225,126

SURGICAL OPERATION TABLES

Norman J. Lee, London, England, assignor to Matburn (Holdings) Limited, London, England

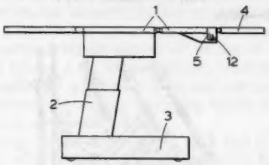
Filed Sep. 21, 1979, Ser. No. 77,788

Claims priority, application United Kingdom, Oct. 5, 1978, 39412/78

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—322 **2 Claims**

1. A surgical operation table comprising a main patient supporting section; an extension section removably fitted to an end of said main section; support arms on said extension, at least one of said arms having teeth; sockets arranged on said main section to receive said support arms; a toothed wheel located in at least one of said sockets and arranged so that said teeth of said support arm mesh with the teeth of said toothed wheel when said support arm is inserted in said socket, said toothed wheel being rotatable only in a direction to permit said



support arm to be inserted in said socket whereby said support arm cannot be removed from said socket while said teeth are meshing; and means for disengaging said toothed wheel from said teeth of said support arm when it is desired to remove said extension section.

4,225,127

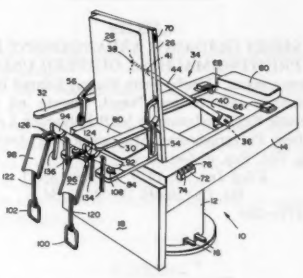
NATURAL CHILDBIRTH POSITIONER

Bernice M. Strutton, 3344 St. James Pl., Antioch, Calif. 94509

Filed Nov. 3, 1978, Ser. No. 957,098

Int. Cl.³ A61G *13/00*

U.S. Cl. 269—325 **4 Claims**



1. A positioner including:

a base;

a chair back pivotably mounted to said base;

means for pivoting said chair back relative to said base;

said base defining a chair seat, said seat defining an aperture therethrough;

first and second leg supports;

means for pivotably securing the leg supports to said base including a substantially cylindrical extension secured to each said leg support and wherein said base defines a substantially cylindrical aperture which receives each said substantially cylindrical extension, and

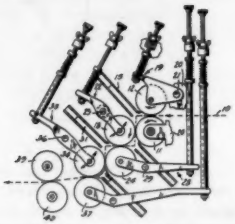
means for removably securing each of said leg support to said base; and

wherein the means for removably securing each said leg support to said base includes at least one tab secured to each said substantially cylindrical extension and at least one indentation in the periphery of each cylindrical aperture, and each substantially cylindrical extension including a peripheral lange space from the tab.

4,225,128
FOLDING MACHINE

Robert H. Holyoke, Buffalo Grove, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Continuation of Ser. No. 525,082, Nov. 18, 1974, abandoned.
This application Feb. 18, 1976, Ser. No. 658,877
Int. Cl.[3] B65H *45/14*
U.S. Cl. 270—68 A 1 Claim

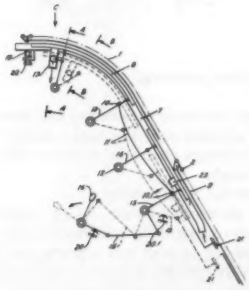


1. A folding machine having a frame comprising a plurality of main rolls rotatably mounted in the machine frame, a cluster of two adjustable rolls associated with each main roll, independent roll adjusting means associated with each adjustable roll, including elongated bearing arm means attached to an end of each adjustable roll and disposed substantially normal thereto; and means for reciprocally moving said bearing arm means to effect movement of said adjustable roll transversely to its axis of rotation, said elongated bearing arm means being formed with a recessed portion constituting a transverse passageway passing a second elongated bearing arm means forming a portion of an independent roll adjusting means associated with another adjustable roll whereby the latter may intersect said first elongated bearing arm means.

4,225,129
SHEET GUIDANCE ARRANGEMENT IN PRINTING-MACHINE OUTFEED UNITS

Hans Zimmermann, Coswig; Fritz Pieper; Konrad Blauth, both of Radebeul, and Hartmut Nagel, Coswig, all of German Democratic Rep., assignors to VEB Polygraph Leipzig Kombinat fuer Polygraphische Maschinen und Ausruestungen, Leipzig, Fed. Rep. of Germany

Filed Jan. 26, 1979, Ser. No. 6,927
Int. Cl.[3] B65H *29/04, 29/36*
U.S. Cl. 271—204 4 Claims

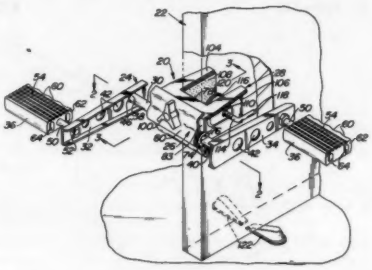


1. In a sheet transport device of the type wherein transported sheets move along a path defined by a sheet-transport means, a sheet-guidance arrangement comprising: a plurality of longitudinal guide elements extending in the direction of sheet transport and adapted to be shifted in the direction transverse to the sheet-transport direction, said guide elements being spaced apart in the transverse direction, said guide elements having apertures therein connectable to a source of suction; supporting means to provide the shifting movement of said longitudinal guide elements; suction means for supplying pneumatic force to the transporting sheets, said suction means including longitudinal guide boxes positioned intermediate said longitudinal guide elements in the space provided therebetween and having apertures associated with pneumatic conduits; and means for moving said suction means away from the sheet-transport path to a position spaced from said path whereat the suction means is retained stationary and is incapable of contact with the sheet during transport of the sheet, said means for moving said suction means including a four-bar parallelogram-type mechanism two bars of which are coupled with said longitudinal guide boxes.

4,225,130
PORTABLE EXERCISE DEVICE

Jerrold Zimmerman, 28 Dutch Rd., East Brunswick, N.Y. 08806

Filed Aug. 28, 1978, Ser. No. 937,238
Int. Cl.[3] A63B *23/04, 69/16*
U.S. Cl. 272—73 5 Claims



1. A portable device for exercising a person's arms or legs and arranged for releasable securement to the vertical edge of a door comprising a holder assembly, mounting means therefor and a pedal assembly, said pedal assembly comprising an axle having a pair of diametrically opposed arms mounted on opposite ends of said axle, with each of said arms including a pedal mounted thereon, each of said pedals being rotatable about an axis parallel to the longitudinal axis of said axle and including a surface having plural indentations configured to receive a person's fingers, said mounting means forming a clamping assembly comprising a base member having a rear face, a front face having legs projecting rearwardly therefrom, tensioning means, and frictional engagement means, said front face including a first horizontal recess, said tensioning means including a second horizontal recess disposed opposite to said first recess, said recesses defining a channel therebetween in which said frictional engagement means is located for mounting and supporting said pedal assembly for rotation about the longitudinal axis of said axle by the application of force to said pedals, said frictional engagement means coacting with the peripheral surface of said axle to provide resistance to the rotation of said pedal assembly about the longitudinal axis of said axle, with the amount of resistance being established by adjustment of said tensioning means, said mounting means releasably securing said device on the door with the rear face of said base member abutting the edge of the door and with portions of the door contiguous with said edge being clamped between said legs, whereupon the horizontal axle of the pedal assembly is parallel to the vertical edge and with each pedal being located on a respective side of the door.

4,225,131

PORTABLE EXERCISING DEVICE FOR MULTIPLE ROUTINES

Bruce C. Sidlinger; Joanne Sidlinger, both of 2810 Country Club Rd., both of Garland, Tex. 75042, and Bruce D. Sidlinger, 7626 Callaghan Rd., Apt. 3006, San Antonia, Tex. 78229

Filed Feb. 3, 1978, Ser. No. 875,102
Int. Cl.[3] A63B *5/18*
U.S. Cl. 272—109 **18 Claims**

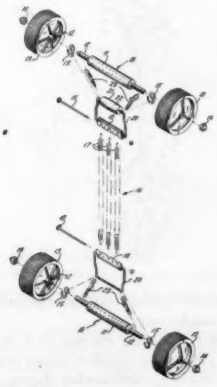
1. In a portable exercising device the combination including a small rebounding bed, means to support said bed elevated from a horizontal supporting surface , auxiliary support means for supporting a user during an exercise program, said support means being spaced forwardly from said rebounding bed, said support means further including at least one member that engages the supporting surface at a location spaced away from the rebounding bed to stabilize the device during use, said support means also including means for engaging the body of the user while performing an exercise on the bed, an elevated hand grip means extending upwardly from said body engaging means, and positioned between said bed and said support means to a position that permits a user to grasp said hand grip means when in a standing position on said bed while practicing controlled jumps or to simulate running while holding said hand grip means.

4,225,132

EXERCISE EQUIPMENT HAVING DETACHABLE SPRING ASSEMBLY AND FOLDABLE CARRYING HANDLE

Larry J. Archambault, Ridgefield Park, N.J., assignor to William Gunner, Pompton Plains and Susan Leiken, Ridgefield Park, both of, N.J., part interest to each

Filed Apr. 9, 1979, Ser. No. 28,496
Int. Cl.[3] A63B *21/02*
U.S. Cl. 272—137 **4 Claims**



1. Portable exercise equipment comprising:

(a) two axle-wheel assemblies;

(b) two "S" hooks connected to each of said axle-wheel assemblies;

(c) a spring assembly disposed between the said two axle wheel assemblies comprising a plurality of spring members, a pair of hitches disposed at each end of said spring members, a pair of retaining pins operatively associated with said hitches for securing said spring members to said hitches, a handle bar connected to each of said hitches, and, a carrying handle connected to one of said handle bars and having a slit formed therein whereby when the other handle bar is folded toward said carrying handle it snaps into said slit forming a carrying handle for the portable exercise equipment; and,

(d) two swivel snaps connected to each end of said spring assembly whereby said spring assembly can be connected to said axle-wheel assemblies by means of said "S" hooks.

4,225,133

DEVICE FOR TEACHING BATTING TECHNIQUES

Joseph D. Kiray, 116 Old Gate Rd., Trafford, Pa. 15085

Filed Oct. 12, 1979, Ser. No. 84,472
Int. Cl.[3] A63B *69/40*
U.S. Cl. 273—26 R **4 Claims**

1. A device for teaching baseball batting techniques, said device comprising:

a base having a well therein for accomodating one foot of a batter; and

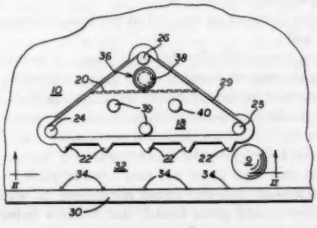
a guide arm flexibly connected to the base such that it is pivoted between one position substantially normal to the base and a second position that is substantially parallel to the base, said guide being sufficiently high when in the one position to provide a yieldable barrier to the other foot of a batter striding into it.

4,225,134

TARGET ASSEMBLY FOR GAMES

Dennis Bailey, Greenwood, Ark., assignor to Spang Industries, Inc., Butler, Pa.

Filed Oct. 13, 1978, Ser. No. 951,309
Int. Cl.[3] A63B *71/00*
U.S. Cl. 273—127 R **7 Claims**



1. A target assembly for use in games in which an electrically conductive ball traverses a game board having a contact plate

layer, a base layer, and an insulator layer that electrically isolates the contact plate layer from the base layer such that the base layer and the contact plate form a normally open switch, said assembly comprising:

a guide member that extends out of the major plane of said game board, said guide member restricting the motion of the ball on the playing board in at least one direction; and

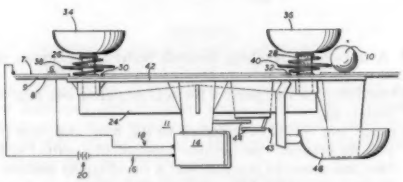
a multiscore plate disposed adjacent to the surface of said game board at a location adjacent to said guide member to form a channel between said multiscore plate and said guide member, said multiscore plate having a plurality of fingers extending into said channel, said multiscore plate being electrically connected to said contact plate layer and electrically isolated from said base layer such that, when the ball contacts the fingers, an electrical current path is closed between said contact plate layer and said base layer.

4,225,135

KICKER-TYPE BUMPER ASSEMBLY FOR GAMES

Dennis Bailey, Greenwood, Ark., assignor to Spang Industries, Inc., Butler, Pa.

Filed Oct. 13, 1978, Ser. No. 951,316
Int. Cl.[3] A63B *71/00*
U.S. Cl. 273—129 P **9 Claims**



1. A bumper assembly for use in a game in which an electrically conductive ball traverses the playing surface of a game board having a base layer, a contact plate, and an insulation layer that electrically isolates tha base layer from the contact plate layer, said bumper assembly comprising:

a solenoid having a core member and a concentrically arranged coil, said coil being electrically connected to the contact plate and the base layer and urging longitudinal movement of the core when energized;

a bumper support member that is responsive to the longitudinal movement of the core;

a bumper fastened to one end of the bumper support member; and

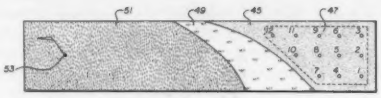
a spring concentrically disposed about a portion of said bumper support member, said spring extending through an aperture in said insulation layer and said base layer and electrically connected to the contact plate layer such that when the ball makes electrical contact between the spring and the base layer, the ball completes a current path between said base layer and said contact plate to energize the solenoid coil and cause movement of said bumper relative to said game board, said bumper being of such shape and position relative to said playing surface that it will engage said ball to cause its projection away from said bumper during said bumper movement.

4,225,136

CONDENSED GOLF PLAYING AREA WITH CHANCE SELECTED STARTING LOCATIONS

Monte Beam, 512 West Berry Lake Rd., Port Orchard, Wash. 98366

Filed May 18, 1978, Ser. No. 907,124
Int. Cl.[2] A63B *69/36*
U.S. Cl. 273—176 AB **15 Claims**



11. A structure for golf, comprising:

a base surface;

playing surface means, positioned on said base surface for dividing said base surface into a plurality of portions each portion simulating, in substantially full size, a section of a conventional golf hole, each portion including a putting green surface region which in turn includes a hole adapted to receive a golf ball, a majority of said portions including in addition, at least one of the group of playing surface regions consisting of: a water hazard region, a sand hazard region, a rough hazard region, and a fairway region, each playing surface portion further including a plurality of designated starting points, said starting points presenting varying levels of difficulty for the player in his attempt to move the golf ball from a starting point to the hole in the putting green surface region, each of said starting points being designated by a symbol; and

means for producing a substantially random set of said symbols for the player each time he uses the structure, wherein said random set includes a symbol for each of said playing surface portions designating the starting point for that portion.

4,225,137

POLYHEDRONAL GAME APPARATUS

Lawrence C. Hebner, 2648 168th NE.,, Bellevue, Wash. 98008

Filed Oct. 10, 1978, Ser. No. 949,452
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—241 **20 Claims**

1. A three-dimensional game apparatus comprising:

(a) a plurality of marker means;

(b) a first polyhedronal body having each of its surfaces divided into a plurality of marker means receiving areas for selectively receiving said marker means;

(c) a second polyhedronal body having each of its surfaces

divided into a plurality of marker means receiving areas for selectively receiving said marker means; and

(d) joiner means interconnecting said first and second polyhedronal bodies in spaced apart relationship, the said first and second polyhedronal bodies each including respectively oppositely facing flat surfaces, each alternately serving as a base surface for supporting the opposite polyhedronal body above the polyhedronal body corresponding to the base surface.

4,225,138

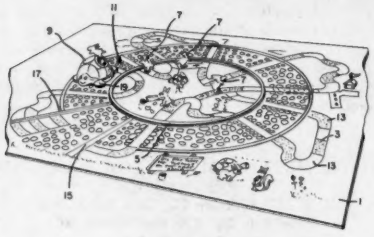
TORTOISE AND HARE GAME

Tobin Wolf, 285 Aycriff Ave., Passaic, N.J. 07006

Filed Feb. 13, 1978, Ser. No. 877,473

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—243 **11 Claims**



1. A game which comprises, in combination,

(a) a game board including a continuous endless guide ring thereon extending a predetermined distance above the upper surface of said gameboard,

(b) a game piece positioned on said board including means to drive said game piece along a circular path having a radius of curvature less than the radius of curvature of the smallest possible circle surrounding said guide ring, and

(c) means on said game piece for contacting said guide ring whereby said game piece follows along said guide ring, further including plural indicating devices and means coacting with said means to drive to periodically randomly display one of said plurality of indicating devices.

4,225,139

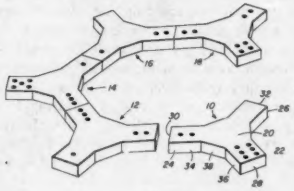
DOMINO TYPE GAME APPARATUS

Stavros Cosmopulos, 8 Bridge St., Norwell, Mass. 02061

Filed Nov. 2, 1978, Ser. No. 956,888

Int. Cl.³ A63F *9/20*

U.S. Cl. 273—294 **6 Claims**



1. Game apparatus, comprising

(a) a set of tiles of similar size and shape adapted to be arranged in abutting relation according to the rules of the game,

(b) each of said tiles being formed with a center portion and three radially extending co-planar legs of equal length and at an equal angular distance from one another about said center portion,

(c) each of said legs terminating in a flat outer face at the end thereof perpendicular to the length of each leg and to the plane of said tile,

(d) said center portion being formed with an outwardly facing flat inner face between each pair of adjacent legs and of a size substantially equal to the size of said end face,

(e) each of said inner faces being perpendicular to the plane of said tile and facing in an angular direction midway between the facing directions of the outer faces of each adjacent pair of legs.

(f) each of said legs being formed with flat side faces each of a size substantially equal to the size of said end face and facing in directly opposite directions perpendicular to the facing direction of said end face,

(g) the majority of said tiles bearing unique marking indicia whereby one tile may be positioned against another tile by butting an outer face of one tile selectively against one of the inner faces, the outer faces and the side faces of the other tile according to the rules of the game.

4,225,140

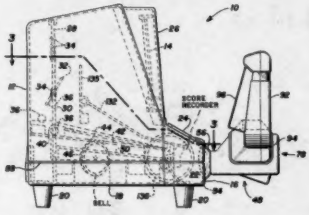
TARGET-TYPE SHOOTING TOY

Bruce M. D'Andrade, Box 130E, R.D. #7, Flemington, N.J. 08822, and Kwok W. Tsui, 13 Tai Yuen St.G/F, WanChai, Hong Kong

Filed Aug. 28, 1978, Ser. No. 937,487

Int. Cl.³ A63F *7/00*

U.S. Cl. 273—356 **7 Claims**



1. A target-type shooting toy comprising in combination:

(a) a housing adapted to be supported adjacent a horizontal surface and having a front wall including a transparent upper portion and a target area rearwardly spaced therefrom and a base wall supported on short legs for positioning said base very close to said surface,

(b) a swivel spherical socket mounted in the lower portion of said front wall adjacent said base wall,

(c) a generally spherical swivel member complementary to said swivel socket and mounted therein for support and provided with a projectile inlet passage means and a projectile return channel extending therefrom away from said socket,

(d) a projectile guide member mounted upon said spherical swivel member and projecting outwardly therefrom away from said target area, said guide member having an elongated barrel fixed adjacent one side of said projectile return channel and a projectile inlet opening extending through a wall of said barrel from said return channel, (e) handle means extending laterally upward from the outer end of said projectile guide member to permit ready universal swivelling of said swivel member relative to said base wall and carry said barrel and inlet passage means therewith,

(f) a trigger member pivoted at one end to the upper end of said handle means,

(g) a spring-pressed plunger mounted within the outermost portion of said projectile guide member extending away from said spherical swivel member and normally covering said projectile inlet opening in said projectile guide,

(h) plunger cocking means carried by the lower end of said trigger member and including a movable latch provided

with a cam surface and engageable with said plunger and operable to move the same toward the outer end of said projectile guide member to compress said spring when said trigger member is moved in cocking direction,

(i) a latch actuating member on said projectile guide member fixed relative thereto and engageable by said cam surface on said latch during continued cocking movement of said trigger and operable to disengage said latch from said plunger when said spring has been compressed a predetermined extent, thereby to free said plunger to discharge a projectile from said barrel toward said target area,

(j) target means on said target area adapted to be hit by a projectile discharged as aforesaid,

(k) projectile return means in said housing operable to return spent projectiles to said projectile inlet means, and

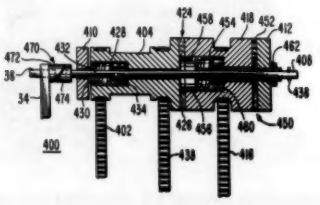
(l) means opposite said projectile inlet opening in said projectile guide member operable to urge a projectile into said barrel when said plunger has been moved to compress said spring, whereby when said latch has disengaged said plunger, said spring instantly urges it in a direction to shoot a projectile toward said target.

4,225,141

MECHANISM FOR AIDING CARRIAGE RETURN IN VIDEO DISC PLAYER

Leslie A. Torrington, and Larry D. Huff, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,526
Int. Cl.³ G11B *25/04*
U.S. Cl. 274—9 B **9 Claims**



1. A player for use with a record caddy; said player comprising:

(A) a housing having an input slot into which a caddy is inserted along a path;

(B) a turntable mounted in said housing for centering and supporting said record;

(C) drive means mounted in said housing for rotating said turntable;

(D) a platform mounted in said housing, and subject to motion between (1) an elevated position, whereat said platform is aligned with said input slot, and (2) a position depressed relative to said turntable;

(E) a record extracting mechanism for removing said record from said caddy during withdrawal thereof subsequent to an occupied caddy arrival at a fully inserted position in said housing, thereby retaining said record in said housing resting on said platform disposed in said elevated position;

(F) means for causing motion of said platform between said elevated position and said depressed position; wherein motion of said platform, having said retained record resting thereon, to said depressed position effects transfer of said retained record to said turntable; wherein subsequent motion of said platform to said elevated position lifts said turntable-supported record to a raised position for retrieval thereof into an empty caddy, when said empty caddy is inserted into said housing while said platform, with said retained record resting thereon, is disposed in said elevated position;

(G) a signal pickup for recovering prerecorded information from a turntable-supported record during playback;

(H) a carriage for supporting said signal pickup;

(I) means mounted on said platform for guiding said carriage in said housing along a second path lying parallel to said path of caddy insertion; the location of said carriage path relative to said caddy path being such that said caddy engages said carriage during a caddy insertion into said housing;

(J) carriage translating means mounted to said platform, and secured to said carriage;

(K) means for utilizing said carriage translating means during playback for translating said carriage along said guiding means in correlation with the rotation of said turntable and away from a starting position in a direction opposite to the direction of said caddy insertion while said platform is disposed in said depressed position; said utilizing means including coupling means interposed between said carriage translating means and a carriage drive means; and

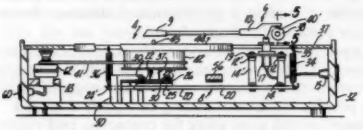
(L) means responsive to motion of said platform to said elevated position for disabling said coupling means, whereby return of said carriage to said starting position can be effected, with freedom from interference by said carriage drive means, when said carriage is at a position other than at said starting position during a caddy insertion.

4,225,142

TURNTABLE SYSTEM WITH LOW AGGREGATE RESONANCE

David M. Zolt, 2338 Golfview Ct., Troy, Mich. 48084

Filed Feb. 28, 1979, Ser. No. 16,091
Int. Cl.³ G11B *3/60*
U.S. Cl. 274—39 A **14 Claims**



1. A high-fidelity turntable system for reproducing a disc having a sound recording thereon whose frequencies lie in an audio spectrum extending from a low frequency range to a high frequency range, said system comprising:

A. a platter assembly for rotating the disc;

B. a tone arm assembly whose arm carries a phonograph cartridge having a stylus engageable with the disc to produce signals in accordance with the sound recording; and

C. a low mass substructure supporting said assemblies in a mounting environment and including a main strut of rigid light-weight material bridging the platter assembly and the tone arm assembly and having resonance characteristics lying above said low-frequency range, said strut having a hollow region with internal damping material therein functioning to dissipate vibrations and resonances excited in said strut in the course of turntable operation whereby said strut is acoustically quiescent throughout said spectrum and the signals produced by the stylus are substantially those derived from the sound recording.

4,225,143

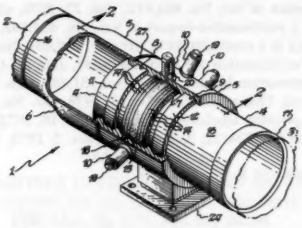
GUIDED EXPANSION JOINT

Martin J. Hannah, Williamsville, N.Y., assignor to Advanced Thermal Systems, Inc., Lancaster, N.Y.

Filed Jun. 19, 1978, Ser. No. 916,585
Int. Cl.² F16L *27/02*
U.S. Cl. 277—11 **3 Claims**

1. In an expansion joint (1) for fluidically connecting in a sealed relationship adjacent ends of two conduits (2, 3) adapted for carrying fluids of varying temperatures, said expansion

joint comprising telescopically arranged outer (5) and inner (4) members adapted to be connected one to each of said conduits, said outer member defining an annular packing chamber (7) opening through its inner surface (29) for containing packing rings (14) at its opposite ends and a pressurized semi-plastic packing composition (13) intermediate said packing rings, said packing rings and packing composition being arranged in a fluid sealing engagement with a highly polished outer surface (15) of said inner member, the improvement for inhibiting score producing engagement of said polished surface (15) with said inner surface (29) incident to misalignment of said outer and inner members (5, 4) while permitting telescopic movements therebetween, characterized in that said outer member (5) carries a pair of annular guide rings (11 and 12) disposed at



fixed distances from said packing chamber (7) and at axially opposite ends of said outer member (5), said guide rings (11 and 12) extending radially inwardly of said inner surface (29) and being sized to maintain a radial gap (23) with said polished surface (15) up to a maximum rated operating temperature of said expansion joint (1) when said outer and inner members (5, 4) are disposed in axial alignment, and said guide rings (11 and 12) are formed of a low friction and abrasive resistant material capable of resisting substantial compressive deformation for inhibiting said score producing engagement between said polished surface (15) and said inner surface (29) while being sufficiently soft to avoid scoring of said polished surface (15) by said guide rings (11 and 12) when said outer and inner members (5, 4) are disposed out of axial alignment.

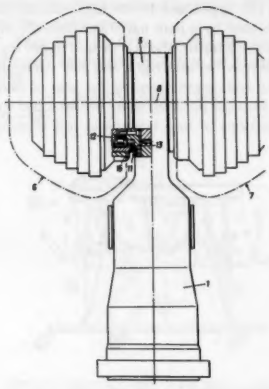
4,225,144

DEVICE FOR SEALING THE GAP BETWEEN COMPONENT PARTS ROTATABLE RELATIVE TO EACH OTHER

Alfred Zitz; Otto Schetina, both of Zeltweg, and Peter Kogler, Knittelfeld, all of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed Jul. 10, 1978, Ser. No. 923,445
Claims priority, application Austria, Jul. 11, 1977, 4968/77
Int. Cl.[3] F16J *15/32, 15/40, 15/44*
U.S. Cl. 277—12 **5 Claims**

1. A device for preventing penetration of dust from the outside inwardly into an annular gap between a cutter arm of a cutting machine and a rotatable cutting head carried on said arm, said cutting head having an interior space containing lubricating oil, said device comprising a first seal closing off said interior space and located in said gap, a second seal located in said gap outwardly of said first seal, the grease flow resistance of said second seal in the outward direction being less than the grease flow resistance of said first seal in an inward direction, and a pressurized grease supply line arranged within said cutter arm opening into said gap at a location between said first and second seals whereby during operation



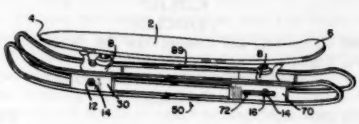
of the cutting head grease flows outwardly through said gap and prevents entry of dust into said gap.

4,225,145

SKATEBOARD APPARATUS

Robert K. Carr, 2533 Cherokee Parkway, Louisville, Ky. 40204

Filed May 3, 1978, Ser. No. 902,518
Int. Cl.[2] A63C *5/00*
U.S. Cl. 280—7.14 **22 Claims**



1. A recreational device comprising
a skateboard
trucks affixed to an underside of the skateboard having horizontal axles,
said trucks comprising forward and rearward pivoting mounts positioned in tandem to each other and near a front of the skateboard and near a rear of the skateboard to enable pivotal steering movement of the axles,
plural elongated sled runners attached to the trucks in transversely spaced parallel front and rear pairs and means connecting the front and rear elongated sled runners on each side of the skateboard for providing a continuous runner surface and enabling lengthening and shortening of the connected runners when engaged in pivoting movement relative to a longitudinal axis of the skateboard.

4,225,146

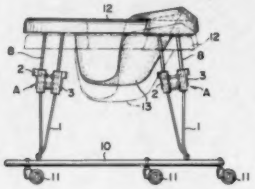
DEVICE FOR EXERCISING INFANT IN WALKING

Kazutsugu Takeuchi, Tokyo, Japan, assignor to Takeuchi Press Limited Company, Tokyo, Japan

Filed Sep. 20, 1978, Ser. No. 944,026
Claims priority, application Japan, Apr. 19, 1978, 53-52666
Int. Cl.[3] A47D *13/04*
U.S. Cl. 280—87.02 W **1 Claim**

1. A device for exercising an infant while walking characterized in that a left and right connection metal fitting having an open outer side is fastened to a respective upper portion of right and left side rods which constitute resilient lower legs

formed in a V-shape, a plurality of upper leg hooking holes formed on the opposing side walls of said right and left connection metal fittings in the vertical direction maintaining a distance between the upper and lower legs, said hooking holes being communicated by a path narrower than the diameter of said hooking holes, a horizontal rod of said upper leg folded in a U-shape is inserted in said right and left connection metal fittings, hooking rods approximately the size of said hooking holes which fit into the hooking holes are attached to the right and left side portions of said horizontal rod thereby to con-



struct a leg member which is vertically adjustable by pressing the connection metal fittings towards each other so as to free the hooking rods from the hooking holes whereby the horizontal rod can be moved in the communicated path between hooking holes, and whereby the legs can be folded when the hooking rods are disengaged from said hooking holes, and means to prevent folding when the hooking rods are inserted in the hooking holes, and the thus constructed leg member is fitted to a plate ring having wheels and to a table plate on which is mounted a saddle.

4,225,147

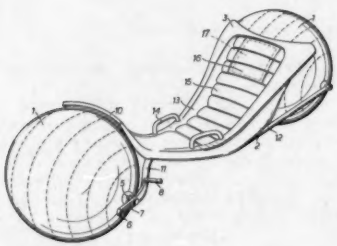
VEHICLES

Michael B. Lowery, 228 Preston New Rd., Blackpool, Lancashire, England

Filed Jan. 31, 1978, Ser. No. 873,844

Int. Cl.³ B62K *9/00*

U.S. Cl. 280—87.01 **9 Claims**



1. A coaster vehicle, comprising

(a) an elongated support structure;

(b) first and second ground-engaging spherical members rotatably connected with opposite ends of said support structure, respectively, said spherical members being mounted for axial rotation about horizontal axes to permit forward movement of the vehicle generally longitudinally of said support structure, one of said spherical members also being connected with said support structure for pivotal movement about a vertical pivot axis;

(c) a seat mounted intermediate the ends of said support structure, said support structure and said seat each having substantial portions extending below a line joining the horizontal axes of rotation of said spherical members, respectively, to cause the center of gravity of the vehicle to lie below the plane containing the horizontal axes of rotation of said spherical members; and

(d) steering means operable by a passenger, when seated on said seat, for steering said one spherical member relative to said support structure, whereby the vehicle can be rocked to and fro about the ground-engaging surfaces of said spherical members in a direction transversely of said forward direction thereby to permit a seated passenger to steer the vehicle by use of said steering means and by laterally tilting the vehicle in said transverse direction.

4,225,148

STEERING SYSTEMS

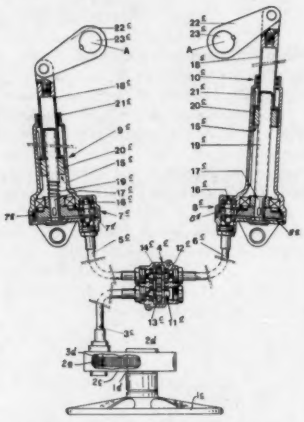
Per U. Andersson, Lidköping, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden

Continuation of Ser. No. 661,812, Feb. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 634,162, Nov. 20, 1975, which is a continuation of Ser. No. 520,654, Nov. 4, 1974, which is a continuation of Ser. No. 588,357, Jun. 19, 1975, which is a continuation-in-part of Ser. No. 331,188, Feb. 9, 1973, abandoned. This application Aug. 3, 1978, Ser. No. 930,756

Claims priority, application Sweden, Feb. 10, 1972, 1566/72; Mar. 20, 1972, 3524/72; Netherlands, Nov. 2, 1973, 7315090

Int. Cl.³ B62D *3/02*

U.S. Cl. 280—95 R **12 Claims**



1. In a steering assembly for vehicles, having a movable travel direction adjustment means,

a steering control system comprising a steering member movable at a variable speed between first and second positions,

transmission means connecting said steering member to the travel direction adjustment means, whereby movement of said steering member between said positions effects through said transmission means a given displacement of said travel direction adjustment means,

said transmission means comprising,

at least one flexible shaft,

a speed increasing gear mechanism having a speed increasing ratio of about 1:15 and connected between the steering member and one end of said flexible shaft for transforming a steering member input speed, identical to the speed of movement of the steering member, into a higher steering member output speed,

a speed reduction gear mechanism having a speed reducing ratio of about 1.75:1 and connected to the other end of said flexible shaft for transforming an input speed, identical to said higher steering member output speed, into a lower output speed, means connected between said reduction gear mechanism and said adjustment means for displacing

said adjustment means in response to movement of said steering member,

said speed increasing ratio of said speed increasing gear mechanism being substantially greater than the spped decreasing ratio of said speed decreasing gear mechanism and said ratios together providing an overall speed increasing ratio of at least about 1:8.57 thereby to minimize the torsion effect of said flexible shaft so that the response of said travel direction adjustment accomplishing means to said steering member is relatively direct and there is no feeling of play in the steering member when it is actuated between said first and second positions.

4,225,149

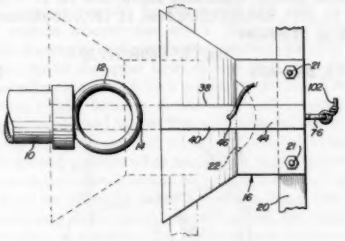
REMOTELY OPERABLE TRAILER HITCH

Robert J. Koopman, Rte. #1, Auburndale, Wis. 54412

Filed Mar. 28, 1979, Ser. No. 24,796

Int. Cl.³ B60D *1/14*

U.S. Cl. 280—477 **9 Claims**



1. In combination with a forwardly projecting hitch pole including a coupling member on its free forward end, a rearwardly opening receiver for said coupling member and for mounting on a towing vehicle, the coupling member including a horizontal forwardly bowed arcuate hitch portion generally cylindrical in cross section, said receiver defining a rearwardly opening horizontally elongated and transversely extending recess in which to receive said hitch portion and including an arcuate rearwardly facing forward seat defining extremity curving rearwardly at its opposite ends toward the ends of said recess, a vertically swingable latch oscillatably supported from said receiver, including a rear forwardly opening hook portion and angularly displaceable relative to said receiver between an operative position with said hook portion horizontally registered with the central portion of the open rear of said recess and an inoperative position with said hook portion vertically displaced out of horizontal registry with said recess, said latch hook portion, when said latch is in said operative position and when said hitch portion is seated in said recess, being disposed immediately rearwardly of said hitch portion, said latch being elongated and extending in a front-to-rear direction relative to said receiver, the forward end portion of said latch including an elongated slot therein, said receiver including a horizontal transverse pivot member slidably and rotatably received in said slot whereby said latch, when in said operative position, may be longitudinally shifted between forward and rearward limit positions defined by the rear and front ends of said slot.

4,225,150

SKI BINDING INCORPORATING A SKI BRAKE

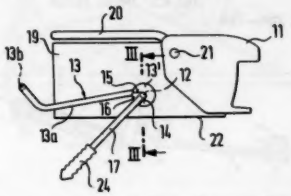
Ralf Storandt, Leonberg, Fed. Rep. of Germany, assignor to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH, Leonberg, Fed. Rep. of Germany

Filed Feb. 23, 1978, Ser. No. 880,458

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1977, 2707769

Int. Cl.³ A63C *5/00*

U.S. Cl. 280—605 **22 Claims**



1. A ski binding incorporating a ski brake and comprising a binding housing, at least one brake arm, a shaft passing transversely through the binding housing and pivotally supporting said at least one brake arm for pivotal movement between a deployed brake position in which it extends below the binding housing and an inoperative position substantially alongside the binding housing, a spring means for biasing said at least one brake arm towards said deployed position, a resetting lever pivotally connected to the housing for movement from a rest position to a brake resetting position, and a first cooperating pair of abutment means respectively associated with the resetting lever and the brake arm and shaft, said cooperating abutment means being disposed so as to contact one another to produce resetting movement of said at least one brake arm from said deployed position to said inoperative position on movement of said resetting lever from said rest position to said brake resetting position and to permit relative movement between the resetting lever and said at least one brake arm to permit unhindered return of said resetting lever to said rest position and unhindered deployment of said at least one brake arm from said inoperative position to said deployed position.

4,225,151

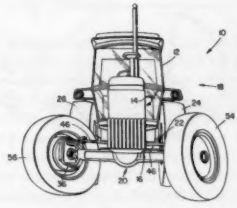
TRACTOR WITH LARGE CASTER ANGLE TO IMPROVE STEERING CLEARANCE

Mark A. Taute, Waterloo; Richard Treichel, Cedar Falls; Jeffrey C. Marks, and Timothy J. Mattson, both of Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jul. 17, 1978, Ser. No. 925,335

Int. Cl.³ B62D *17/00*

U.S. Cl. 280—661 **36 Claims**



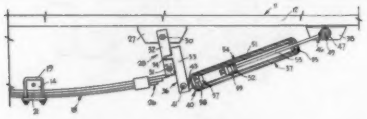
4. An off-road vehicle having a fore and aft extending body with one end carried by a transversely extending axle member having king pin means at opposite ends with each pivotally connected to a wheel assembly having a driven ground engag-

ing steerable wheel spaced laterally outwardly from said fore and aft extending body, means acting on the wheel assembly for steering and turning said vehicle at a predetermined minimum turn radius, the improvement comprising: said king pin means having a caster angle in a range from 11° to 30°.

4,225,152
TRAILER SUSPENSIONS

Peter R. K. Eaton, 11 Main North Rd., Clare, Australia

Filed Mar. 31, 1978, Ser. No. 892,019
Int. Cl.² B60G *11/04*
U.S. Cl. 280—718 **8 Claims**



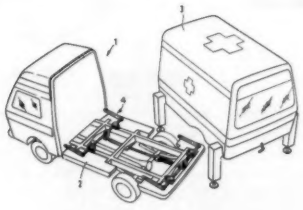
1. In an improved vehicle suspension system comprising a vehicle chassis suspended for movement relative to its wheels by a pair of leaf springs, one on each side of the chassis, leaf spring connection means connecting each said leaf spring at one of its ends between movable arms of a shackle which is carried on a shackle pin itself supported by the underside of the vehicle chassis, the improvement comprising;

a pair of identical double-action fluid dampers each comprising a piston cylinder combination, each said damper being operatively connected at its ends to and extending between first pivotal means carried on said arms of a respective said shackle and second pivotal means secured with respect to the chassis and spaced longitudinally from said first pivotal means, each said leaf spring connection means being located between its corresponding said shackle pin and said first pivotal means, said dampers being arranged to slope in an upwards direction away from said first pivotal means.

4,225,153
TRANSPORT VEHICLE

Ulrich Bez, Gerlingen; Gebhard Ruf, Weissach; Imre Selmeci, Stuttgart; Klaus R. Düwel, Marbach; Herbert Linge, Weissach; Hartmut Holzer, Hemmingen; Volker Munz, Ludwigsburg; Wolfgang Hanisch, Wimsheim, and Karl Hauser, Flacht, all of Fed. Rep. of Germany, assignors to Dr. Ing. H.C.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 12, 1977, Ser. No. 859,595
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2655989
Int. Cl.² B62D *33/06*
U.S. Cl. 280—788 **15 Claims**

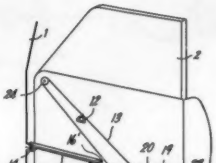


1. A transport vehicle which includes a vehicle frame, a vehicle cab or cabin, and a spring support means for supporting the vehicle cab or cabin at the vehicle frame, characterized in that at least one of a mechanical and hydraulic elevating means is operatively connected with the vehicle cab or cabin and the vehicle frame for enabling a predetermined amount of pivot movement of the vehicle cab or cabin relative to the vehicle frame in a vertically extending plane, the mechanical elevating means includes at least a pair of spaced guide members rotatably arranged at the vehicle frame so as to extend transversely of a longitudinal axis of the vehicle frame, at least one connecting means is provided and extends in a longitudinal direction of the vehicle frame for connecting said guide members to each other, and in that means are operatively connected with the elevating means for effecting a damping action thereon.

4,225,154
PASSIVE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

Juichiro Takada, Tokyo, Japan, assignor to Takata Koyjo Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 950,020
Claims priority, application Japan, Oct. 11, 1977, 52-120963; Nov. 14, 1977, 52-151633[U]; Nov. 14, 1977, 52-151634[U]; Mar. 20, 1978, 53-031094
Int. Cl.² B60R *21/10*
U.S. Cl. 280—804 **17 Claims**



1. In a passive occupant restraint belt system for vehicles which includes a restraining belt, apparatus for moving the belt from an occupant-restraining to occupant-releasing position in response to partial opening of a door of the vehicle comprising belt transfer means engaging the belt for moving the belt from the restraining to the releasing position and motion transmission means coupled to the belt transfer means for transmitting and amplifying opening motions of the door to the transfer means, the transmission means including (a) a motion amplifier mounted on one of the vehicle body and the door, (b) a folding linkage having one end attached to the other of the body and door and the other end coupled to an input component of the motion amplifier, and (c) means for controlling the linkage to maintain it in substantially its folded state during movement of the door from the closed to a partly open position, thus to transmit such door movement to the motion amplifier, and to cause the linkage to unfold during movement of the door from the partly open to the fully open position, and substantially to cease transmitting such door movement to the motion amplifier, whereby the bolt is moved substantially completely from the restraining to the releasing position, during movement of the door from the closed to the partly open position.

4,225,155

PASSIVE SAFETY DEVICE FOR SECURING OCCUPANTS OF VEHICLES, IN PARTICULAR MOTOR VEHICLES

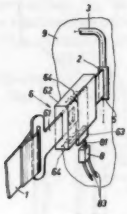
Ulrich Seiffert, Brunswick, and Wilfried Schwanz, Ahnsen, both of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 952,978

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749417

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—804 **3 Claims**



1. In an automobile passive safety device of the type having a shoulder safety belt extending diagonally across the upper body of a passenger, a slide displaceable in a guide attached to the automobile frame above one of the automobile doors, belt lock means for detachably coupling one end of the belt to said slide, and a driving means for displacing said slide from a removed position wherein said belt is lifted away from the automobile passenger to a restraining position wherein said belt extends across the upper body of said passenger, the improvement wherein said belt lock means comprises a first belt lock member rigidly fastened to said slide and a second belt lock member connected to said one end, wherein the second member may be rigidly coupled to said first member to assume a spatially-defined position when said slide is in said restraining position, an electric switch means, and means for actuating said switch means for effecting either a first switching state or a second switching state of said switch means, the actuating means including an actuating element supported by said switch means, wherein said switch means is attached to said vehicle body and positioned such that said second member engages said actuating means to actuate said switch and effect said first switching state only when said slide is in said restraining position and said second member is coupled to said first member, and wherein said switch means assumes said second switching state when said belt lock means and slide are moved away from said restraining position or said second member is uncoupled from said first member.

4,225,156

PASSIVE RESTRAINT BELT SYSTEM

Ronald R. Barnett, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1979, Ser. No. 23,970

Int. Cl.[2] B60R *21/10*

U.S. Cl. 280—804 **1 Claim**

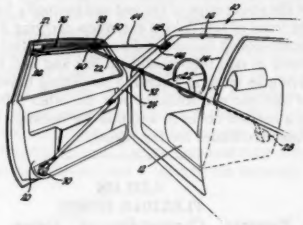
1. In combination with a vehicle body having an occupant compartment in which an occupant seat is accessible through a door opening defined by a door opening structure of the vehicle body and selectively opened and closed by a movable door having a longitudinally extending window frame, a passive occupant shoulder belt arrangement comprising:

a shoulder belt having a outboard end fixedly mounted on the window frame and an inboard end retractably mounted on the vehicle body inboard the occupant seat to retract the belt to a diagonal restraining position across the occupant when the door is closed and to extend the belt when the door is open;

a track extending longitudinally along the window frame;

a carriage movable along the track and slidably engaging the shoulder belt;

and a rigid link of fixed length having a forward end pivotally mounted on the vehicle body door opening structure and a rearward end pivotally connected with the carriage



to pull the carriage forwardly along the track during door opening movement to move the shoulder belt forward of the occupant and to push the carriage rearwardly upon closing movement of the door to establish the carriage in juxtaposition with the outboard fixed end of the shoulder belt and thereby return the belt to the diagonal restraining position.

4,225,157

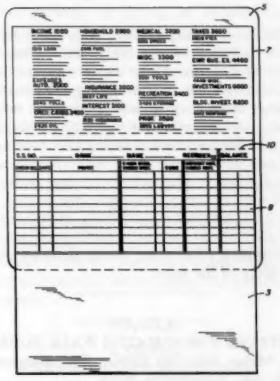
CASH AND CHECK REGISTER

Hubert W. Hamacher, 525 Nixon Ave., Indiana, Pa. 15701

Filed Jun. 4, 1979, Ser. No. 45,292

Int. Cl.[3] B41L *1/24;* **B42D** *15/00*

U.S. Cl. 282—23 R **1 Claim**



1. A cash and check register comprising a pad of rectangular sheets bound together along one longitudinal edge; said edge being the top edge of the sheets; most of said sheets being alternating original and copy sheets; a sheet directly above the uppermost original sheet having on its back a list of different income and expense items each identified by a different code number; said list being visible while entries are being made on said uppermost original sheet; each copy sheet having on its back a list the same as said first-mentioned list and visible while entries are being made on the original sheet below said copy sheet; each of said original and copy sheets being provided with a plurality of information-receiving columns extending from top to bottom thereof with each column indicating at its top the information to be entered in that column; said columns being the same on all original and copy sheets and being identi-

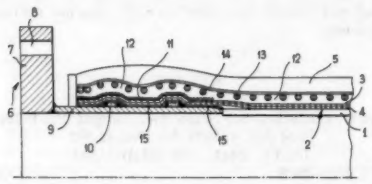
fied for entry of check number, date, payee, cash disbursements and check distribution, code number from said list, check amount and account balance; each original sheet being such that the entries being written on it appear on the underlying copy sheet also; the original sheets being perforated along their upper margins for easy removal from the pad for accounting purposes; and a relatively stiff backing sheet attached to the back of said pad and having an integral extension projecting beyond the lower edge of the pad and normally folded over the pad; the front of said folded extension carrying a list of different number-coded income and expense items that are different from those in said first-mentioned list; and said backing sheet also having an integral extension projecting beyond the upper edge of said pad and foldable over the other folded extension to form a register cover or a tongue for insertion in the pocket of a protective folder for the register.

4,225,158

FLEXIBLE HOSES

Daniel Puechavy, Clermont-Ferrand, France, assignor to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France

Filed Feb. 21, 1978, Ser. No. 879,754
Int. Cl.[2] F16L *11/12*
U.S. Cl. 285—47 **2 Claims**



1. A flexible hose having a rubber body and a metal connecting flange at each end of said body, said rubber body being strengthened by a reinforcement comprising continuous metal elements extending from an overlapping relationship with one said end flange to an overlapping relationship with the other said end flange and embedded in said body, wherein the entire surfaces of said flanges situated facing said overlapping metal elements of said reinforcement are covered with an insulating layer formed from a glass cloth having high mechanical strength and high electrical resistance and from a firm binder of high electrical resistance comprising epoxyresin, said insulating layer adhering to said metal surfaces of said flanges and to said overlapping reinforcing metal elements embedded in said rubber body of the hose.

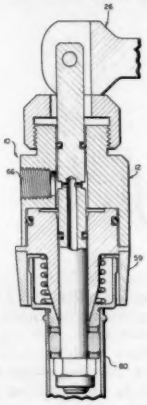
4,225,159

FITTING FOR SMOOTH WALL TUBES

Homer Van Meter, Sun City Center, Fla., assignor to Ramer Test Tools, Inc., Stevensville, Mich.

Continuation-in-part of Ser. No. 901,609, May 1, 1978, Pat. No. 4,154,465, which is a continuation-in-part of Ser. No. 816,157, Jul. 15, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 22,964
The portion of the term of this patent subsequent to May 15, 1996, has been disclaimed.
Int. Cl.[2] F16L *37/18*
U.S. Cl. 285—104 **8 Claims**

1. A fitting for mounting to the end of a smooth wall tube to seal the inside diameter thereof, said fitting comprising a body having a passageway extending longitudinally through it; a collet operator at one end of said body having an aperture in it in axial alignment with said passageway in said body and a cam surface on an outer surface thereof; a shaft slidably disposed within and extending through said passageway in said body and said aperture in said collet operator; means coupled to one end of said shaft and operable to slidably reciprocate said shaft; an elongated tubular split collet slidably disposed about at least a portion of said collet operator and having a cam surface on an interior diameter thereof operatively engageable with said cam surface on said collet operator and an outer surface on said split collet operatively engageable with the interior surface of said tube to grip said tube without deforming it; biasing means disposed between said collet operator and said split collet for normally urging said split collet out of engagement with said collet operator; the other end of said shaft having sealing



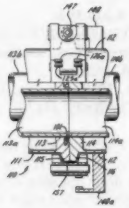
means retained thereon; said split collet and said collet operator being forcibly urged together to engage said cam surfaces to thereby cause said split collet to grip the inside diameter of a tube and said sealing means being compressed into sealing engagement with the inside diameter of the tube when said shaft is operated, said sealing means and said split collet being disposed with respect to one another so that the sealing means engage the lower end of said split collet to raise the latter to engage said cam surface on it with said cam surface on said collet operator.

4,225,160

LOW FRICTION REMOTELY OPERABLE CLAMP TYPE PIPE CONNECTOR

John E. Ortloff, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 27, 1978, Ser. No. 881,293
Int. Cl.[3] F16L *23/00, 39/00*
U.S. Cl. 285—137 A **22 Claims**



1. In a clamp-type conduit connector for securing the ends of conduits having mating end flanges providing a fluid pressure tight connection, said flanges having a wedge-shaped cross-section, said connector including a plurality of clamp segments pivotally secured to each other and having arcuate grooves of wedge-shaped cross-section shaped to fit said con-

duit flanges in a mating position and adapted when circumferentially tightened to compress said flanges together by wedging action of said segments there-against, the improvement wherein said segments include bearings positioned therein to reduce the friction between the interior of said segments and the wedge-shaped surfaces of said flanges during circumferential tightening of the clamp segments.

4,225,161

SPLIT FLANGE ADAPTER PAD

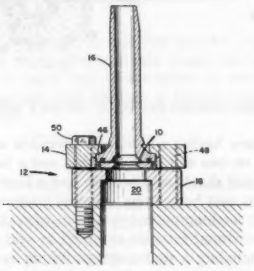
Jackson A. Smith, 5443 Rand Rd., Bradner, British Columbia, Canada

Continuation-in-part of Ser. No. 841,730, Oct. 31, 1977, abandoned, which is a continuation of Ser. No. 701,172, Jun. 30, 1976, abandoned. This application Jun. 21, 1978, Ser. No. 917,571

Claims priority, application Canada, Apr. 15, 1976, 250340

Int. Cl.³ F16L 3/04

U.S. Cl. 285—159 **6 Claims**



1. Adaptor apparatus for fastening an hydraulic flange coupling having a standard size diameter flange to a hydraulic component requiring a step size flange coupling of a diameter larger than said standard size diameter, said adaptor apparatus comprising:

a metallic disc-shaped adaptor pad having a central port and an upper face having a central recess therein of a diameter substantially equal to said standard size flange diameter for receiving said flange and

for sealingly contacting the terminal face of said flange coupling and having an external diameter corresponding to the diameter of said step size flange; and

a pair of split flange halves substantially semicircular in shape and having dual concentric recesses and an axial recess for accommodating said flange coupling, a first one of said dual concentric recesses being of a diameter substantially equal to said step size flange coupling and being adapted to abut the perimeter of said upper face of said disc-shaped adapter pad, a second one of said dual concentric recesses being of a diameter equal to said standard size diameter flange of said flange coupling and being adapted to contact the perimeter thereof, said pair of split flange halves having clearance holes from side to side for fastening means to pass therethrough, so as to securely fasten said flange coupling and said adapter pad to said hydraulic component.

4,225,162

LIQUID TIGHT CONNECTOR

Frank P. Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

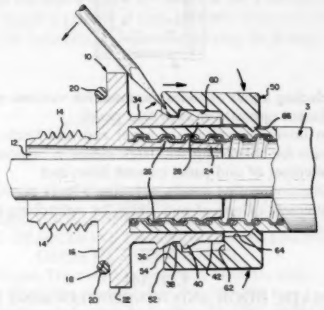
Filed Sep. 20, 1978, Ser. No. 944,100

Int. Cl.² F16L 3/04

U.S. Cl. 285—161 **9 Claims**

1. A liquid tight connector for coupling metallic flexible conduit to an electrical enclosure comprised of:

an electrically conductive connector body and a resilient collar mounted thereon, each having an axial passage therethrough, said connector body having a first end adapted for coupling said connector body to an electrical enclosure, a shoulder portion adjacent said first end and a second end adjacent said shoulder portion for coupling said connector body to said conduit, said second end having spaced apart concentric first and second projections, said first projection dimensioned to be received in said conduit and having a spiral ridge thereon for engaging the interior of said conduit, said second projection dimensioned to surround said conduit and having at least one exterior rib spaced from said shoulder on the surface thereof, said resilient collar having in a relaxed state a diameter of said passage which is less than the diameter of said second projection, and further having a first internal ridge at one end thereof, a second internal ridge proximate the other end thereof and a tapered rib forward of said



second internal ridge and remote from said first internal ridge, said tapered rib having an internal diameter less than the external diameter of said conduit and said second internal ridge having an internal diameter less than the external diameter of said second projection in the relaxed state of said collar, said collar mounted on said second projection with said first internal ridge positioned between said shoulder portion and said exterior rib and said second internal ridge positioned forward of said exterior rib whereby after threading said conduit onto said spiral ridge said resilient collar is urged away from said shoulder portion and toward said exterior rib until said second internal ridge dismounts said second projection and said first internal ridge abuts said exterior rib thereby allowing said resilient collar to compress inward toward its relaxed state and said tapered rib to engage the exterior surface of said conduit.

4,225,163

PANIC DEVICE ACTUATOR

S. Eugene Hubbard, Niles, and Richard A. Meisterheim, Dowagiac, both of Mich., assignors to Kawneer Company, Inc., Niles, Mich.

Filed Sep. 1, 1978, Ser. No. 938,924

Int. Cl.² E05C 9/10, 15/02

U.S. Cl. 292—21 **30 Claims**

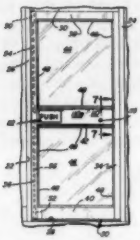
1. In combination a door with a panic actuator apparatus for unlatching said door mounted in and normally maintained in latched engagement with a door frame, said door including a pair of separate stiles along opposite edges and latch actuating means movable for retracting latch means which is normally providing said latched engagement between the door and the door frame, said apparatus comprising:

housing means for said panic actuator comprising a rail of said door extending between and connected to said stiles at opposite ends between opposite faces of said door, said

housing including an enlarged opening on one face of said door,

an actuator panel mounted in said enlarged opening for relative movement on said door in response to external pressure applied at any point against a relatively large outer face of said panel;

means supporting said panel from said housing for movement along a linear axis normal to said one face of the door



including a pair of slides mounted for vertical movement adjacent opposite ends of said panel,

means interconnecting said panel and said latch actuating means for unlatching said latch means in response to said movement of said panel on said door, and

said interconnecting means including a lever pivoted by the movement of one of said slides for unlatching said latch means.

4,225,164

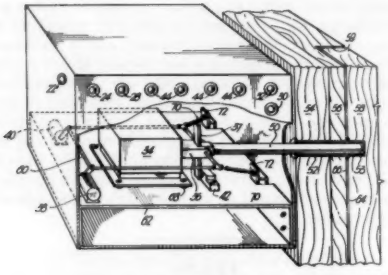
AUTOMATIC DOOR AND WINDOW LOCKING SYSTEM

Brian J. K. Wensley, and Gillian E. Wensley, both of 10979 - 84th Ave., North Delta, British Columbia, Canada

Filed May 22, 1978, Ser. No. 908,265

Int. Cl.[2] E05C *1/06*

U.S. Cl. 292—33 **11 Claims**



1. A remotely controlled locking device comprising:

a plurality of locking elements for locking a corresponding plurality of movable wall-opening barriers, each locking element having an individual lock-operating mechanism for selectively, reversibly driving said corresponding locking element into a locked or an unlocked position in response to "lock" or "unlock" control signals, respectively;

master control means remotely connected to each lock-operating mechanism for selectively providing to the latter said "lock" or "unlock" control signals;

display means connected to each lock-operating mechanism responsive to the condition of each locking element, for displaying said condition of each locking element;

local control means for rendering inoperative control signals provided by said master control means and for the provision of "unlock" control signals to associated lock-operating mechanisms; and

manual override controls mechanically coupled to each locking element to allow manual movement of each locking element to a locked or an unlocked position.

4,225,165

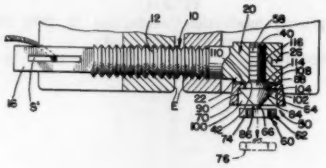
TAMPER-RESISTANT FASTENER FOR UTILITY METERS

David A. Kesselman, 1183 Elm Ave., Sonoma, Calif. 95476

Filed Jun. 19, 1979, Ser. No. 50,098

Int. Cl.[3] E05C *13/02*

U.S. Cl. 292—256.67 **15 Claims**



1. A tamper-resistant device for use on a utility meter comprising:

a ring screw having an elongate threaded shank, a slotted tongue on one end of said shank, and a head on another end of said shank, said head having a bore defined therethrough, said bore being oriented transversely with respect to the longitudinal centerline of said shank;

a tamper-resistant fastener mounted in said bore, said fastener including a stud received within said bore, a stud engaging means engaged on said stud, a gripping means engaging portion connected to said stud engaging means for transmitting torque to said stud engaging means from a gripping means;

a frangible neck connecting said gripping means engaging portion to said stud engaging means, said frangible neck being adapted to fracture when a predetermined torque is applied to said gripping means engaging portion to separate said gripping means engaging portion from said stud engaging means; and

a cylindrical slip ring for preventing a gripping instrument from applying a gripping force to said stud engaging means for turning said stud engaging means to remove the fastener, said slip ring surrounding said stud engaging means and slidably connected thereto to freely rotate about said stud engaging means when said gripping means engaging portion is separated from said stud engaging means.

4,225,166

LOCK STRIKER WITH RETRACTABLE KEEPER BAR

Jiro Tanaka, Tokyo, and Yoshimasa Tsuchiya, Sayama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 16, 1979, Ser. No. 30,325

Claims priority, application Japan, May 12, 1978, 53/55491

Int. Cl.[2] E05C *13/00*

U.S. Cl. 292—341.17 **10 Claims**

1. A mechanism for latching a first member to a second member, comprising:

a bracket secured to said second member to define a certain space between said bracket and said second member;

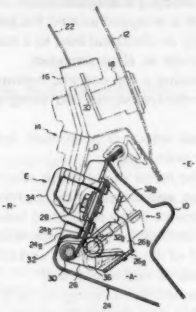
a base member stationarily disposed in said space;

a swingable plate swingably supported at a portion thereof by said base member, said plate being swingable between first and second positions in said space;

a keeper bar secured to said plate, said keeper bar being projected beyond said bracket when said plate takes said

first position and being retracted into said space when said plate takes said second position;

biasing means for biasing said plate to swing in a direction to take said first position; and



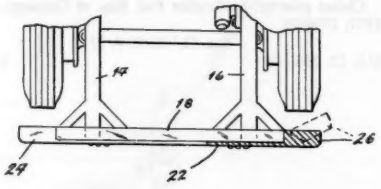
a hook member connected to said first member, said hook member being engageable with said keeper bar in its projecting state to latch said first member to said second member when said first member is moved toward said second member.

4,225,167

VEHICLE BUMPERS WITH COLLAPSIBLE PARTS

Carl F. Buettner, 9501 Pinespray, St. Louis, Mo. 63126, and John S. Hill, 604 Plaza Dr., Joplin, Mo. 64801

Filed Mar. 6, 1978, Ser. No. 883,829
Int. Cl.³ B60R *19/00*
U.S. Cl. 293—120 **2 Claims**



1. A safety bumper construction for trucks and other like vehicles having body portions and spaced front and rear wheel assemblies comprising a first member which is approximately as long as the width of the vehicle body on which it is to be installed, and a second member adapted to be mounted on the first member, said second member being longer than the first member and having end portions which extend beyond at least one end thereof and in front of at least one of said vehicle wheel assemblies, said second member being formed of a relatively rigid but frangible material whereby the endwardly projecting portion thereof is much more likely on impact to fracture and break-off than to bend.

4,225,168

CUSHIONING MEANS FOR MOTOR VEHICLES

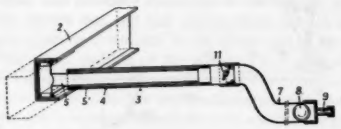
Hubert Granig, Feldkirchnerstr. 30/87, Klagenfurt, Austria

Filed Jun. 19, 1978, Ser. No. 916,739
Claims priority, application Austria, Jun. 22, 1977, 84415/77
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—134 **12 Claims**

1. In a device having a bumper bar for motor vehicles, which bumper is fastened to the vehicle via at least one hydraulic cylinder, the bumper bar being able to be moved out by application of hydraulic liquid contained in the hydraulic cylinder by means of at least one pressure-applying means and being able to again be pushed back upon impact, the improvement wherein

at least one chamber filled with the hydraulic liquid is spacially separated from the hydraulic cylinder,

said chamber is connected with the hydraulic cylinder,



a floating piston displaceably disposed in said chamber,

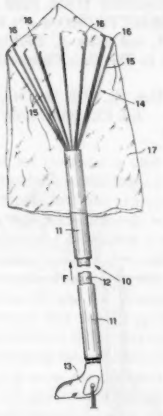
said pressure-applying means via said floating piston for acting on the liquid which is located in the chamber such that the liquid is pressed at least partially from said chamber into the hydraulic cylinder for moving the bumper bar out.

4,225,169

PINCER-LIKE TOOL, ESPECIALLY FOR COLLECTING ORGANIC DEJECTIONS OF ANIMALS TO ENCLOSE THEM IN A CONTAINER

Michele DeToma, Traversa Via Veneto 3, Brescia, Italy

Filed Dec. 6, 1978, Ser. No. 967,086
Claims priority, application Italy, Dec. 21, 1977, 7139/77 [U]
Int. Cl.³ A47F *13/06*
U.S. Cl. 294—1 BA **2 Claims**

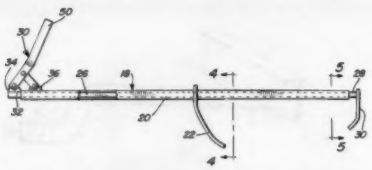


1. A pincer device for the collection of organic animal wastes within an envelope fitted at the free end thereof, comprising: a telescopic stick consisting of an external hollow cylindrical element and an internal element coaxial therewith, one extremity of said internal element terminating in a grip and the opposite extremity thereof terminating in a mechanical hand consisting of a splayed group of resilient wire-shaped fingers which diverge from the extremity of the internal element to which said fingers are attached, the free ends of said wire-shaped fingers being curled towards the inside of said mechanical hand.

4,225,170
LOG SIDELOADER

Dennis E. Flynn, 588 W. 11th, Winner, S. Dak. 57580

Filed Aug. 10, 1979, Ser. No. 65,576
Int. Cl.[3] A47J 49/14
U.S. Cl. 294—11 10 Claims

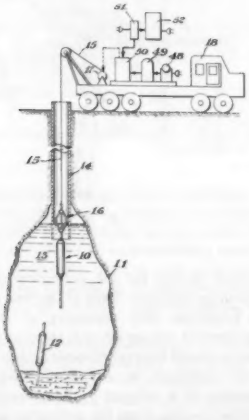


1. A log handle for engaging, supporting and lengthwise feeding log wood sections into a wood stove firebox, said handler including an elongated tubular arm, a first elongated transverse jaw carried by and projecting outwardly of one side of said arm and defining a transverse opening in one end closely slidably receiving said arm therethrough for longitudinal shifting of said jaw along said arm and frictional locking of said jaw in shifted position along said arm is response to slight relative angular displacement of said jaw and arm about an axis transverse to said arm and jaw, an elongated operator slidingly telescoped in said arm with one end thereof projecting outwardly of the corresponding end of said arm, a second elongated transverse jaw having one end supported from said operator and projecting outwardly of the side thereof corresponding to said one side of said arm in opposition to said first jaw, and actuator means operatively connected between said arm and operator for shifting said operator toward a predetermined position relative to said arm in a direction retracting said one end of said operator relative to said corresponding arm end.

4,225,171
ELECTROMAGNET TOOL FOR RETRIEVING MAGNETIC OBJECTS FROM AN EARTH CAVERN

Robert A. Hay, II, and John A. DeBlick, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1978, Ser. No. 956,116
Int. Cl.[3] B66C 1/06
U.S. Cl. 294—65.5 2 Claims



1. An electromagnet tool for recovering magnetic objects from an earth cavern filled with liquid, the tool comprising:

an elongate magnet having a North pole and a South pole, each pole defining a flat surface which is joined to an inwardly curved surface, the respective curved surfaces defining a semi-circular groove between the flat surfaces, and the combination of the flat surfaces and the semi-circular groove defining a magnetic face on the magnet;

a wire coil which is wrapped around the magnet, and which is connected by an electrical lead to a source of electrical power, to provide an electromagnet;

a metal shield having a top end and bottom end, the shield enclosing the electromagnet and being spaced from the wire coil;

a flexible material which is positioned between the metal shield and the wire coil;

the top end of the metal shield being adapted for fastening into a draw line, and the electrical lead from the wire coil to the power source being positioned inside the draw line;

a guide member defined by a flat blade which is fastened to the bottom end of the metal shield, and is set an an oblique angle to the axis of said shield; and

the tool being adapted for lowering on the draw line through a casing member into the earth cavern, and the magnet face providing a contact surface for retrieving magnetic objects from the earth cavern.

4,225,172
FLEXIBLE CONNECTION FOR CABLE WIRE ROPE ENDS

Bruno Marquardt, Adelbylund 17, Flensburg, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,311
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746026
Int. Cl.[3] B66C 1/12
U.S. Cl. 294—74 13 Claims

1. A flexible connection for cable wire rope ends, which includes: a hose-like braided sleeve of wire enveloping the cable wire rope ends to be interconnected, said sleeve when pushed together in axial direction having an inner diameter greater than, and when stretched in axial direction having an inner diameter less than the diameter of the cable wire rope ends to be interconnected, the rims of said braided sleeve which extend around the cable wire rope end to be interconnected being firmly connected to said cable wire rope ends to be interconnected, the rims of said braided sleeve which extend around the cable wire rope ends to be interconnected being sewed to said cable wire rope ends to be interconnected.

4,225,173

CABLE RETRIEVING TOOL

Ruben C. Martinez, 403 - 35th, Snyder, Tex. 79549

Filed Feb. 5, 1979, Ser. No. 9,679
Int. Cl.³ E21B *31/00*
U.S. Cl. 294—86.1 **9 Claims**

1. In a cable retrieving tool having
a. a mandrel,
b. said mandrel tapering into a cone configuration at one end,
c. said mandrel being threaded at the end opposite said cone configuration,
the improved structure for engaging cable comprising:
d. a blade helixed about said mandrel
e. said blade periodically terminating in engaging teeth.

4,225,174

JAW-TYPE REFUSE COLLECTING DEVICE

Michael P. Hennessy, 1924 W. Wilson Ave., Chicago, Ill. 60640; Andrew B. Prueher, 1016 Sheridan Rd., Highland Park, Ill. 60035, and Paul E. Wagner, 2471 N. Clybourn Ave., Chicago, Ill. 60614

Filed Nov. 21, 1977, Ser. No. 853,811
Int. Cl.² A47F *13/06*
U.S. Cl. 294—113 **6 Claims**

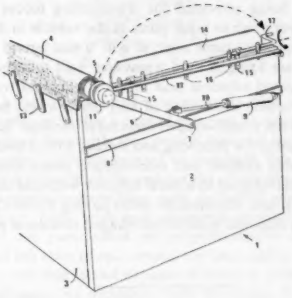
1. A refuse collecting device adapted during use thereof to extend substantially vertically and comprising an upstanding tubular handle; a pair of opposed jaws located at the lower end of the handle and consisting of a fixed jaw connected rigidly to the lower end of the handle and a movable jaw pivoted to the fixed jaw for swinging movement towards and away from said fixed jaw between closed and open positions, and provided on its upper portion with a fixed crank arm; a hollow pistol grip assembly located at the upper end of the handle and embodying a substantially L-shaped casing consisting of a generally horizontal grip proper and a generally vertical sheath connected to and depending from one end of the grip proper and telescopically received over the upper end of the handle, an elongated trigger arm having one end thereof disposed within the casing, its intermediate portion extending through a slot in the underneath side of the grip proper and also in the sheath in the casing, and its other end exposed and disposed adjacent to said underneath side of the grip proper, and a pivot element disposed within said casing and applied to said one end of the trigger arm so that said trigger arm is pivoted to move up and down between retracted and unretracted positions; a pull rod extending loosely and longitudinally through the handle, having its upper end pivotally connected to the trigger arm between the latter's one end and intermediate portion and its lower end pivotally connected to the distal end of the crank arm on the upper portion of the movable jaw, and adapted when the trigger arm is swung upwards to its retracted position to move the movable jaw into its closed position and when the trigger arm is swung downwards to its unretracted position to swing the movable jaw to its open position; and spring means disposed within the casing and applied to the trigger arm in such manner that it yieldingly biases the latter to its unretracted position.

4,225,175

ARRANGEMENT FOR COVERING A CHIP TRANSPORT BOX

Sture Fredin, VästansjöS-820 62 Bjuraker, Sweden

Filed Jan. 29, 1979, Ser. No. 7,210
Int. Cl.³ B60P *7/04*
U.S. Cl. 296—98 **8 Claims**



1. An arrangement for covering a chip transport box (1) comprising a cover (4) which is rolled up on and unrolled from a shaft (5) and a swinging arm (6) provided at each of two opposite walls in the chip transport box, whereby one end of the swinging arm is pivotally journalled at the respective wall (2), and at least one piston and cylinder unit (9,10) fastened to at least one of the swinging arms and to said wall (2) for swinging the swinging arms (6) and for extending the cover (4) across the chip transport box from one side thereof to the other, the swinging arms (6) in their other ends rotatably carrying the shaft (5) for swinging the same across the chip transport box when the swinging arms are operated by the piston and cylinder unit (9, 10), one end of the cover firmly fastened to the shaft (5), the other end thereof directly or indirectly attached to a first side wall of the chip transport box, a pull-belt (12) having one end attached to a second side wall of the chip transport box opposite said first side wall, the other end thereof adapted to be rolled up on and unrolled from the shaft (5) in a manner such that when the swinging arms (6) are operated, cover 4 is rolled up on shaft 5 as the pull-belt 12 is unrolled from shaft 5 and cover 4 is unrolled to cover the chip transport box 1 as the pull-belt 12 is wound to top shaft (5), and the cover (4) comprising resilient means (13, 4) which in the final stage of the unrolling of the cover are extended and act with a tensioning force on the cover whereby this is brought to close contact with the upper edges of the chip transport box.

4,225,176
MOTOR VEHICLE, ESPECIALLY AGRICULTURAL MOTOR VEHICLE

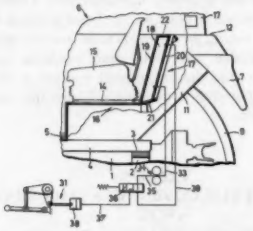
Gottfried Moser, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Nov. 2, 1978, Ser. No. 957,304

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756342

Int. Cl.[3] **B62D** *27/00*

U.S. Cl. 296—190 **6 Claims**



1. A motor vehicle, especially agricultural motor vehicle comprising a driver's cab including a driver's seat and also comprising lateral parts formed by lateral walls of fenders, said lateral parts being provided for transmitting forces exerted upon the driver's cab to other parts of the vehicle in the event the vehicle upsets or turns over, in whi·h said lateral walls of said fenders are bridged by a transverse wall reinforcing the latter and located adjacent said driver's seat, said transverse wall at least within the region of said driver's seat being designed as a honeycomb-shaped structural member having at least one chamber for receiving and storing a fluid medium for a fluid operable system, and intermediate plates connecting said honeycomb-shaped structural member with said side walls of said fenders, said intermediate plates having a lower longitudinal stiffness than said honeycomb-shaped structural member.

4,225,177
INERTIA ACTIVATED LOCKING DEVICE FOR VEHICLE SEATS

Bernd Klüting, Radevormwald, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid-Hasten, Fed. Rep. of Germany

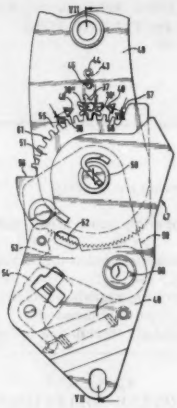
Filed Oct. 23, 1978, Ser. No. 953,611

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1977, 2747584

Int. Cl.[2] **B60R** *21/10;* **A47C** *31/00*

U.S. Cl. 297—216 **12 Claims**

1. An inertia activated locking device for motor vehicle seats of the type having a stationary part, a movable part and means for adjusting and holding the position of said movable part relative to said stationary part, said device comprising a locking gear coupled to one of said parts; a pinion supported for free rotation in an oblong slot provided in the other part in operative proximity to said locking gear, said pinion being in engagement with said locking gear and freely rotatable about its axis when said locking gear rotates with a steady movement; at least one arresting member secured to said other part at such a distance from one extremity of said oblong slot as to allow free rotation of said pinion when said locking gear rotates with said steady movement and means to retain said pinion at said distance and to permit engagement of said pinion with said arresting member when the pinion is displaced due to accelerated movement of said one part relative to said other part, into



abutment with said one extremity of said slot thus arresting the movement of said locking gear.

4,225,178
VEHICLE SEAT

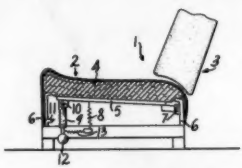
Juichiro Takada, 3-12-1, Shinmachi Setagayaku, Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,064

Claims priority, application Japan, May 26, 1978, 53/062309

Int. Cl.[2] **B60R** *21/10*

U.S. Cl. 297—216 **7 Claims**



1. A vehicle seat comprising a frame adapted to be mounted on a vehicle body; a substantially rigid seat support plate mounted on the frame for generally vertical movement of at least a portion thereof relative to the frame, the support plate having a supporting surface generally coextensive with the seat-supported part of a person seated on the vehicle seat; at least one spring means for resiliently supporting the support plate and a person seated thereon; a cooperating ratchet and pawl device associated with the seat frame and the support plate and selectively engageable to lock the support plate against downward movement relative to the frame; and pendulum means associated with the ratchet and pawl device and inertially responsive to an abrupt change in the velocity of the vehicle for engaging the ratchet and pawl.

4,225,179
REMOVABLE FURNITURE COVERING

Lucchino Oltrona Visconti, Via Parini, 7, Monza, Italy

Filed Dec. 13, 1980, Ser. No. 969,952

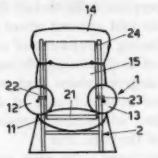
Claims priority, application Italy, Dec. 13, 1977, 30650 A/77; Dec. 30, 1977, 31451 A/77

Int. Cl.[2] **A47C** *27/00*

U.S. Cl. 297—219 **10 Claims**

1. Removable covering for a foldable chair, having arm

rests, a transverse front bar, and an upper transverse bar at the back of the chair, for imparting to said chair the appearance of an upholstered piece of furniture, comprising: at least partly stuffed parts, with an internal configuration conforming relatively tightly to the foldable chair so as to cover the same and change the appearance thereof, including two stuffed arm rest parts, with a configuration adapted to conform to the arm rests



of the chair, a stuffed part constituting at least in part a seating section and having a front adapted to surround the transverse front bar of the chair, a stuffed part constituting at least part of a back or head rest section, and adapted to surround the upper transverse bar, and a connecting part forming a seat and back between said front of the seating section and the head rest section.

4,225,180

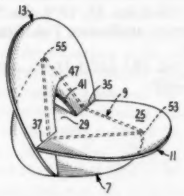
COLLAPSIBLE CHAIR

Robert E. Gillis, P.O. Box 67, Aptos, Calif. 95003

Filed Nov. 13, 1978, Ser. No. 960,244

Int. Cl.[2] A47C *3/02, 7/00*

U.S. Cl. 297—258 **3 Claims**



1. A chair which is composed of a flat sheet material such as plywood which can be stored and shipped as a flat package and which can be easily erected to chair form without the use of tools or fastening elements, said chair comprising four pieces as follows:

a. Two rocker elements, each of said elements having a rounded bottom portion, serving as a rocker for contact with the floor and a back portion extending upwardly therefrom and a cutout portion opposite said rounded bottom portion and said back portion, said cutout including two straight walls inclined at an angle of slightly over 90° to each other, namely a seat-supporting section **19** opposite said rounded bottom portion and a back-supporting section **21**, and a slot extending downward from the back portion at the junction of the seat-supporting section and the back-supporting section,

b. A seat adapted to fit over said rocker and terminating in a tail-like extremity in the shape of a keystone with the large portion of the keystone away from the balance of the seat,

c. A back portion having an opening in the center large enough to allow the large portion of the keystone of the tail to pass through the opening when the seat is in a vertical plane and to fit snugly with the small portion of the keystone when the seat is in a horizontal plane preventing the seat from rising up and having a pair of slots on the bottom of the back portion, said slots being complementary to the slots in said rocker elements whereby: the seat portion can be turned 90° from normal; the keystone portion inserted in the slot in the back portion and turned to normal seat position to rest on the rocker portion and said rocker elements can be placed on the floor with the bottom portion of each rocker resting on the floor; the back portion placed over the rocker elements with the slots of the back extending into and beyond the slots of the rocker elements.

4,225,181

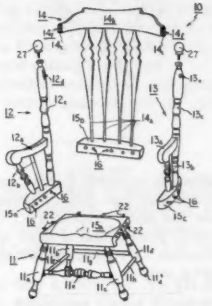
KNOCK-DOWN ROCKERS AND THE LIKE

Melvin N. Lock, Waban, and Achille F. Chiappetta, Medfield, both of Mass., assignors to Albert M. Lock & Son, Inc., Boston, Mass.

Filed Apr. 17, 1979, Ser. No. 30,743

Int. Cl.[2] A47C *3/02, 7/00*

U.S. Cl. 297—258 **11 Claims**



1. A knock-down chair comprising a first prefabricated sub-assembly including a central seat part having four depending legs fixed therewith, said central seat part lacking side and rear marginal portions needed to complete the full side and rear lateral expanse of the seat for the chair, second and third prefabricated sub-assemblies each including arm rest means respectively fixed with and extending above right and left marginal seat parts which are proportioned to abut with the right and left sides of said central seat part and to complete the right and left side lateral expanse of the seat, a fourth prefabricated sub-assembly including back rest means fixed with and extending above a rear marginal seat part proportioned to abut with the rear of said central seat part and to complete the rear lateral expanse of the seat, and means for securing said marginal seat parts in abutted relationship with said marginal portions of said central seat part.

4,225,182

POWER DRIVEN ADJUSTER FOR A BACKREST OF A VEHICLE SEAT

Paul Werner, Remscheid, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,850

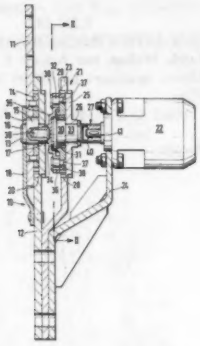
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1977, 2734568

Int. Cl.[2] A47C *1/025*

U.S. Cl. 297—362 **9 Claims**

1. In an arrangement for adjusting the inclination of a backrest part relative to a seat part of a motor vehicle seat, including two hinge members secured, respectively, to said seat parts, a rotary first actuation member having a centric portion bearing for rotation on one of said hinge members and an eccentric portion supporting for rotation the other hinge member, a first internal gear formed on said one hinge member around said centric portion and a first spur gear formed on said other hinge member around said eccentric portion, said spur gear being smaller in diameter than said internal gear and being

in mesh with the latter, a combination comprising a reduction transmission including a support member secured to said one hinge member and being formed with a second internal gear corresponding in diameter to said first internal gear; a rotary second actuation member having a first centric portion bearing for rotation on said support member at the center of said inter-



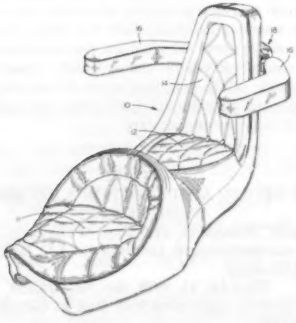
nal gear, an intermediate eccentric portion and a second centric portion; a second spur gear corresponding in diameter to said first spur gear and being supported for rotation on said intermediate eccentric portion and in mesh with said second internal gear; and means for connecting said second spur gear to said first actuating member.

4,225,183

MOTORCYCLE SEAT WITH PIVOTABLE ARMRESTS FOR THE PASSENGER

Michael W. Hanagan, Somers, and Donald I. Schoeck, Wolcott, both of Conn., assignors to Corbin-Gentry, Inc., Somersville, Conn.

Filed Jan. 11, 1979, Ser. No. 2,781
Int. Cl.[2] A47C *7/54*
U.S. Cl. 297—417 **13 Claims**



1. An armrest assembly for mounting on a seat having a seat portion and a back portion, comprising:

a. a support adapted for mounting on the back portion of the seat with its forward face disposed thereagainst;

b. a pair of armrests disposed on opposite sides of said support to extend along opposite sides of the associated seat, each armrest having one end pivotably supported on said support for pivoting relative to said support about a first axis, said first axis extending substantially parallel to the plane of said forward face to lie generally parallel to the planes of said seat and back portions when said support is mounted on the associated seat, by application of a moment to said armrest about said first axis from a first stable position of said armrest, in which said armrest extends substantially perpendicularly to the plane of the forward face and thereby to the associated back portion along the side of the seat when said support is mounted on the back portion, said pivoting from said first position being through an arc of at least about fifteen degrees to a second stable position thereof, each of said armrests also being pivotable relative to said support about a second axis substantially perpendicular to said first axis by application of a moment to said armrest about said second axis, said pivoting producing movement of said armrest from said first position of said armrest through an arc of at least about fifteen degrees about said second axis to a third position thereof in which ease of dismounting from the seat is permitted when said support is mounted on the back portion of the seat; and

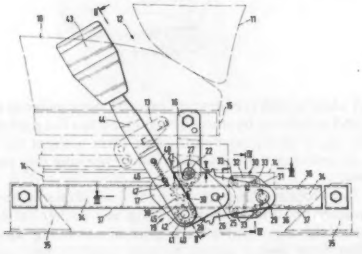
c. bias means associated with each armrest and applying a moment about said second axis to said armrest to bias said armrest in said first position when said armrest is in said first position and to bias said armrest in said third position when said armrest is in said third position, the moment applied by said bias means being lower when said armrest is in a range of positions intermediate between said first and third positions than when said armrest is in said first position.

4,225,184

ANCHORING MEANS FOR SAFETY BELTS FOR MOTOR VEHICLE SEATS

Willibald Strowick, Remscheid-Lennep, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Remscheid-Hasten, Fed. Rep. of Germany

Filed Jan. 15, 1979, Ser. No. 3,606
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1978, 2802617
Int. Cl.[2] A62B *35/00;* A45D *19/04*
U.S. Cl. 297—468 **11 Claims**



1. An anchoring arrangement, for safety belts of an adjustable seat in a vehicle, comprising: a supporting rail fixedly mounted to the body of the vehicle; a clamping member surrounding the supporting rail and being movably supported thereon; a bearing member rigidly connected to the seat and supporting a first arresting member; a swing lever pivotably supported on said bearing member and having one arm in sliding contact with said first arresting member and the other arm pivotably connected to said clamping member; a strap connected to said safety belt; a second arresting member connected to said strap and being movably arranged in said bearing member, said second arresting member being normally held in a position apart from said first arresting member while during an excessive pull imparted to the safety belt is brought into engagement with said first arresting member and with said one arm of said swing lever to form therewith a rigid unit which transmits the excessive pull to the clamping member and locks the same on said supporting rail.

4,225,185

VERTICALLY ADJUSTABLE MOUNTING ARRANGEMENT FOR SAFETY BELTS AT A SIDE RAIL OF AN AUTOMOTIVE VEHICLE

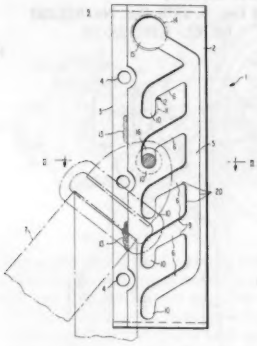
Peter Krzok, Leutenbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 3, 1979, Ser. No. 26,771

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1978, 2815918

Int. Cl.[2] **A62B** *35/00*

U.S. Cl. 297—468 **6 Claims**



1. A vertically adjustable mounting arrangement for vehicle safety belts for enabling a stepwise variable adjustment of an abutment height of a deflecting or end member of the safety belt, the arrangement including a mounting plate, a vertically extending slot disposed in the mounting plate, a plurality of lateral slots extending from the vertically extending slot obliquely downwardly and toward a front of the vehicle, the lateral slots defining a plurality of individual catching points for an adjusting member of the safety belt and for holding the deflecting or end member of the safety belt, characterized in that a drop slot is provided at an end of each of the lateral slots opposite the vertically extending slot, the drop slots are offset downwardly from the lateral slots and have a length which is at least twice a width of the lateral slots whereby an automatically effective gravity-caused locking of the adjusting bolt is obtained at an end position of the lateral slots.

4,225,186

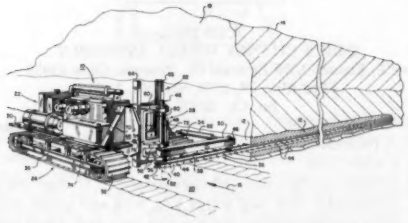
HORIZONTAL MINING MACHINE AND METHOD OF SLOT MINING

John R. Stratton, 6735 Churchill Way, Dallas, Tex. 75230

Filed Feb. 1, 1979, Ser. No. 8,288

Int. Cl.[2] **E21C** *35/20, 43/00*

U.S. Cl. 299—18 **3 Claims**



1. A mining machine for removing near surface mineral deposits comprising, in combination:

a mobile, wide track surface vehicle having a chassis and a power plant mounted on said chassis;

an elevator assembly including a guide track mounted on said chassis for pivotal movement about a horizontal axis extending transverse to the direction of travel of said vehicle and an elevator block engaged for reciprocal movement along said track;

a first linear actuator coupled intermediate said guide track and said chassis for angularly displacing said track about its pivotal axis;

a second linear actuator coupled intermediate said guide track and said elevator block for displacing said elevator block along said guide track;

a cutter assembly including an elongated guide bar and a cutting chain mounted for movement around the periphery of said guide bar, said guide bar being coupled to said elevator block for pivotal movement through a cutting plane extending substantially normal to said guide track;

a third linear actuator coupled intermediate said chassis and said cutter bar for angularly displacing said cutter assembly through said cutting plane; and

rotary drive apparatus coupled to said cutter assembly for driving said cutting chain around the periphery of said guide bar.

4,225,187

SCABBLER BIT FLOOR SURFACING MACHINE

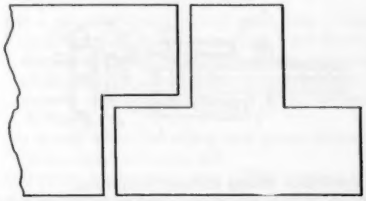
David T. Allan, 9 Broomhill Dr., Rutherglen, 6 Glasgow, Scotland (G3 3QH), assignor to David Thomson Allan and John MacDonald & Co. (Pneumatic Tools) Ltd., both of Glasgow, Scotland

Filed Aug. 4, 1978, Ser. No. 931,071

Claims priority, application United Kingdom, Aug. 4, 1977, 32691/77

Int. Cl.[3] **E21C** *35/18*

U.S. Cl. 299—37 **5 Claims**



1. A scabbler machine having at least one pair of scabbling bits, said bits being aligned in a direction perpendicular to the path of movement of the scabbler machine, each bit having a shank for connection to the reciprocal piston of the scabbler machine and a head provided with tungsten carbide or like, cutting members, the head of one bit of said pair having a portion which overlies a portion of the other bit of said pair so that the bits of said pair overlap one another in the direction of movement of the scabbler machine over the surface to be treated.

4,225,188

APPARATUS FOR REMOVING AND COLLECTING MOISTURE FROM A MOISTURE-LADEN AIR FLOW

Robert C. McGuire, Dublin; Albertus G. Selder, Pickerington, and Mark A. Hutchison, Columbus, all of Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 12, 1978, Ser. No. 950,549

Int. Cl.[3] **E21C** *35/22;* **B01D** *47/02*

U.S. Cl. 299—64 **8 Claims**

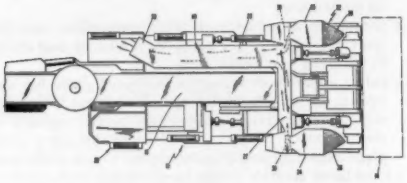
5. Apparatus for separating moisture from air comprising:

means for conducting a flow of moisture-laden air;

means defining a moisture separating station having a flow

inlet, a flow outlet located rearwardly of said flow inlet, and moisture separating means defining air channels for receiving air flow from said inlet and causing moisture in the air flow to separate-out and gravitate toward a lower collecting surface to be conducted rearwardly;

a moisture accumulating section located adjacent a rearward end of said collecting surface to remove said rearwardly conducted moisture, said accumulating section including a



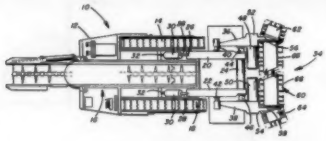
top wall disposed at a level above a lower level of said inlet, a generally forwardly facing entrance disposed at a rear end of said moisture separating section for admitting said rearwardly conducted moisture, the portion of said entrance immediately below said top wall and above the inflowing moisture being substantially open to substantially prevent moisture droplets from traveling upwardly over said top wall.

4,225,189

CONTINUOUS MINING MACHINE AND CUTTER DRUM DRIVE THEREFOR

Maurice K. LeBegue, Argillite, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Nov. 20, 1978, Ser. No. 962,080
Int. Cl.[2] E21C *25/08*
U.S. Cl. 299—71 **8 Claims**



1. A continuous mining machine comprising,

an elongated body portion mounted on propelling means,

a drum member rotatably mounted forwardly of said body portion, said drum member having cutting elements extending therefrom,

said drum member having an intermediate section and a pair of end sections, said end sections extending angularly to said intermediate section so that certain of said cutting elements mounted on said drum member overlap along the front of said drum member to provide a continuous cutting pattern along the front of said drum member,

said drum member intermediate section and at least one of said pair of drum member end sections forming an opening therebetween,

input drive means extending through said opening for rotating said drum member intermediate section,

said drum member intermediate section and at least one of said pair of end sections each having a convexly shaped external surface,

external meshing gear means nonrotatably secured to said convexly shaped external surfaces of said drum member intermediate section and of said pair of drum member end sections respectively for transmitting rotation of said input drive means from said drum member intermediate section to one of said pair of end sections, and

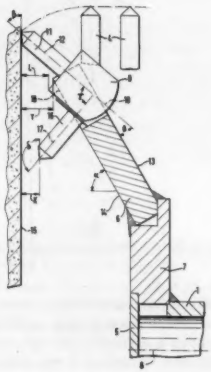
said external meshing gear means being selectively spaced on said convexly shaped external surfaces to provide portions of said convexly shaped external surfaces between said external meshing gear means for urging the movement of dislodged material away from said convexly shaped external surfaces upon rotation of said drum member.

4,225,190

MINING DRUM WITH CUTTING AND SHEARING BITS ON CONICAL RING

Dieter Hoffmann, Holthauser Strasse 39, D-4320 Hattingen, Ruhr, Fed. Rep. of Germany

Filed Dec. 6, 1978, Ser. No. 967,703
Int. Cl.[2] E21C *25/10*
U.S. Cl. 299—89 **15 Claims**



1. In a mining auger including an auger shaft having a front end, a conical end ring affixed to the front end of the auger and having a forwardly oriented face and a peripheral edge zone; a plurality of tool holders affixed to the peripheral edge zone in a circumferential distribution and each having a forwardly oriented face; a cutting tool bit each having an axis and each being affixed to a separate tool holder; each cutting tool bit projecting forwardly beyond a peripheral edge of the conical end ring; each cutting tool bit having an outer tip and a longitudinal axis extending at an inclined orientation with respect to an imaginary frontal plane which is perpendicular to the auger axis and touches the tip of the cutting tool bit; the improvement wherein at least some of said tool holders carry a shearing tool bit each having an axis extending from said forwardly oriented face of said conical end ring in the direction of said frontal plane; further wherein each said shearing tool bit has a tip being spaced from said frontal plane in the direction of said conical end ring; and further wherein each said tip being closer to said frontal plane than any part of said conical end ring and any part of said tool holders.

4,225,191

QUICK CHANGE WHEEL ASSEMBLY

Jerry L. Knoski, 1695 Emerald Ct., Newark, Ohio 43055

Filed Mar. 29, 1979, Ser. No. 24,913
Int. Cl.[3] B60B *3/16*
U.S. Cl. 301—9 DN **6 Claims**

1. A demountable wheel assembly, comprising:

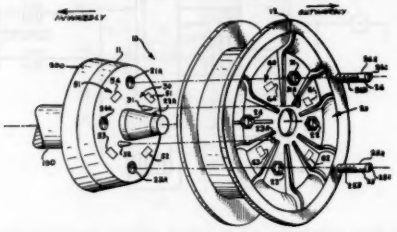
a. a wheel hub;

b. a wheel configurated and dimensioned to fit over and to complement with said wheel hub, with said wheel fitted over, complementing, and abutting with said wheel hub;

c. and, means for releasably connecting said wheel to said wheel hub, whereby said wheel is releasably connected to said wheel hub, and wherein said means includes:

(1) a plurality of tapered and threaded cavities in said wheel hub;

(2) a plurality of threaded nuts affixed to said wheel, with one nut for each one of said plurality of threaded cavities in said wheel hub, wherein each said nut is partially embedded in said wheel, and wherein each said nut has affixed thereto an extension which is tapered and threaded complementarily to a corresponding cavity of said plurality of tapered and threaded cavities in said wheel hub, and wherein each said nut and its extension are in alignment with their said corresponding cavity;



(3) and, a plurality of headless bolts, with each bolt having a first slotted end and a second tapered and threaded end, and with one bolt for each one of said plurality of threaded nuts and its corresponding cavity, wherein said threaded second end of each said bolt has threads complementary to said threads of its corresponding threaded nut, threaded nut extension, and threaded cavity, and wherein each said bolt is threadly engaged with its corresponding threaded nut, threaded nut extension, and threaded cavity.

4,225,192

ANTISKID CONTROL VALVE

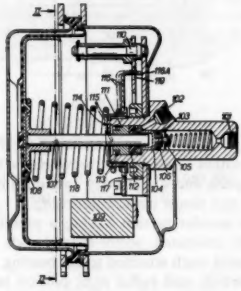
Jurgen Dufft, Kenilworth, England, assignor to Girling Limited, Birmingham, England

Filed Nov. 22, 1978, Ser. No. 963,160

Claims priority, application United Kingdom, Jan. 13, 1978, 1513/78

Int. Cl.[3] **B60T** *8/16, 8/26*

U.S. Cl. 303—24 A **8 Claims**



1. A control valve assembly for a vehicle braking system, comprising an inlet an outlet, a proportioning valve controlling communication between said inlet and said outlet, said proportioning valve having a control valve member movable to open and close said valve, inertia-responsive means responsive to deceleration of the vehicle for reducing the pressure at said outlet after said valve has closed, said inertia-responsive means comprising an inertia-responsive member which is movable to apply a load to said control valve member, and fluid pressure operable retaining means which prevents movement of said inertia-responsive means from an inoperative position, in the absense of pressure at said inlet.

4,225,193

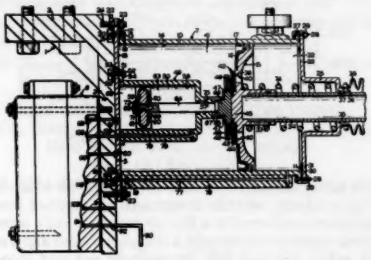
CONTROL VALVE ARRANGEMENT FOR COMBINED BRAKE CYLINDER AND RESERVOIR

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed May 1, 1979, Ser. No. 35,117

Int. Cl.[3] **B60T** *15/22*

U.S. Cl. 303—35 **12 Claims**



1. Fluid pressure brake apparatus for a railway vehicle operative responsively to variation of fluid pressure in a brake pipe of the vehicle comprising:

(a) a brake cylinder device including:

(i) a power cylinder;

(ii) a piston abutment in said power cylinder and cooperating therewith to form first and second chambers on opposite sides thereof;

(iii) a positioning cylinder having a diameter less than the diameter of said power cylinder;

(iv) a piston abutment in said positioning cylinder and cooperating therewith to form third and fourth chambers on the opposite sides thereof, said positioning cylinder piston abutment being connected with said power cylinder piston abutment so as to act cooperatively therewith;

(v) biasing means for urging said piston abutments in a brake release direction; and

(vi) means for providing flow of fluid pressure from said first chamber to said second chamber and for preventing flow of fluid pressure from said second chamber to said first chamber; and

(b) a control valve device including:

(i) fluid pressure operative pilot valve means having a release position for charging said first and second chambers with fluid pressure carried in said brake pipe and for venting said third chamber when the fluid pressure in said brake pipe is increased, whereby said bias means is effective to move said piston abutment to a brake release position, and having an application position for supplying fluid pressure to said third chamber and for releasing fluid pressure from said first chamber when the fluid pressure in said brake pipe is decreased, to provide a pressure differential across said piston abutments acting in opposition to said biasing means to effect movement of said piston abutments to a brake application position, whereby braking forces are provided in accordance with the force differential thereon; and

(ii) transfer valve means for preventing said release of fluid pressure from said first chamber until said piston abutments have moved to their said brake application position.

4,225,194

SAFETY DEVICE FOR A DOUBLE-CIRCUIT TYPE AIR BRAKE FOR A VEHICLE

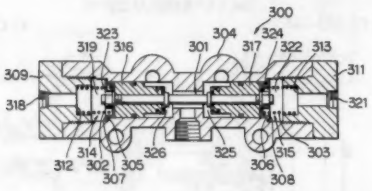
Kei Nakasu, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 28, 1978, Ser. No. 937,454

Claims priority, application Japan, Feb. 13, 1978, 53-15110; Apr. 21, 1978, 53-48212

Int. Cl.³ B60T *15/46*

U.S. Cl. 303—84 A **3 Claims**



1. A safety device for double-circuit type air brake system used in a vehicle, wherein compressed air supplied from one compressor is delivered to a first air reservoir and a second air reservoir respectively through a first check valve and a second check valve, and said first air reservoir and said second air reservoir are used as pressure sources to respective first and second mutually independent air brake circuits, the safety device compresing:

a housing having a stepped bore which is composed of a small diametered bore in its middle portion and large diametered bores on both sides thereof, said compressor being connected to the small diametered bore, and said first reservoir and said second air reservoir being respectively connected to said large diametered bores;

a piston composed of a rod portion and a pair of piston heads disposed on respective ends of said rod portion, said piston heads being respectively slidable and air-tightly fitted in respective said large diametered bores of said housing, each inner end face of said piston heads and each stepped portion formed between said small diametered bore and said large diametered bores constituting a pair of cut-out valves for respectively and alternatively shutting off air flow from said compressor to said first reservoir and to said second reservoir when said piston is shifted from its neutral position;

neutral position retaining means including spring means for retaining said piston in the neutral position by resilient force of said spring means; and

pressure feed back means for feeding back pressure in said first air reservoir and in said second air reservoir respectively to each outer and surface of said piston heads, whereby when either one of said first and second brake circuits is damaged, said piston is shifted from the neutral position by pressure difference acting on said outer end surfaces for shutting off the damaged one of said brake circuits from said compressor.

4,225,195

PROCESS AND DEVICE FOR THE REGULATION OF BRAKING PRESSURE IN LOCK-UP PROTECTION SYSTEMS

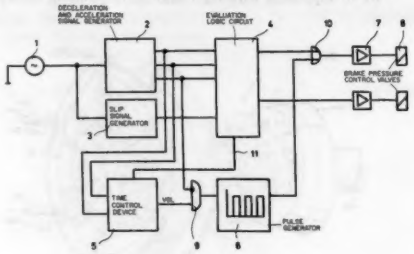
Lutz Weise, Misburg, and Peter Liermann, Gehrden, both of Fed. Rep. of Germany, assignors to Wabco Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 909,867

Int. Cl.³ B60T *8/08*

U.S. Cl. 303—106 **15 Claims**

1. A process for the regulation of vehicle brake pressure in a wheel skid control system consisting of the steps of: measuring the rotational velocity of a vehicle wheel; differentiating said measured wheel velocity to obtain wheel acceleration and deceleration rates; comparing said wheel acceleration and deceleration rates with different threshold values to obtain wheel acceleration, deceleration, and slip control signals; regulating the wheel brake pressure during an initial cycle of wheel skid control in accordance with said acceleration, deceleration, and slip control signals, so that the reapplication of said brake pressure is with a constant gradient; measuring the duration of said brake pressure reapplication during said initial wheel skid



control cycle to establish a time period T1; reducing said time period T1 to establish a time period T2 that is shorter in duration than said time period T1; and reapplying said brake pressure during at least one subsequent cycle of wheel skid control, so that, upon expiration of said time period T2, the gradient of said brake pressure is reduced relative to the gradient during said time period T2 to obtain a stepped reapplication pressure gradient.

4,225,196

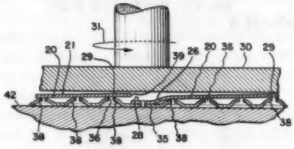
HYDRODYNAMIC COMPLIANT THRUST BEARING

Stanley Gray, Skaneateles, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,259

Int. Cl.³ F16C *32/06, 39/04*

U.S. Cl. 308—9 **8 Claims**



1. A compliant hydrodynamic fluid film thrust bearing for positioning within a gap defined between the opposed surfaces of a thrust plate and a relatively rotating thrust runner, and fastening to said thrust plate, comprising:

(a) a first annular section having a plurality of angularly adjacent, truncated, sector-shaped pads of thin, flexible sheet metal, each attached to the bearing along one radial edge portion, said radial edge portion being the leading edge with respect to the direction of rotation of the thrust runner, and

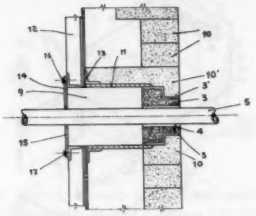
(b) a second annular section underlying and supporting said first annular section, and having a plurality of slits, each slit forming at least one edge of a resilient projection elevated above the plane of said second annular section, said slits being distributed around said second section in a plurality of angularly spaced clusters which are angularly aligned with said sector-shaped pads to provide resilient support for said pads.

4,225,197

INSULATION STRUCTURE FOR KILN ROLLERS AND ELEMENT FOR USE THEREWITH

Enzo Mantegani, Milan, Italy, assignor to Welko Industriale S.p.A., Milan, Italy

Filed Sep. 29, 1978, Ser. No. 947,178
Claims priority, application Italy, Oct. 7, 1977, 28367 A/77; Jul. 10, 1978, 25489 A/78
Int. Cl.[3] F16C *17/04*
U.S. Cl. 308—37 6 Claims



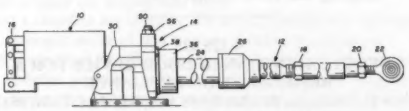
1. An improved bearing structure for supporting ends of rollers as the rollers pass through supporting walls designed to close off gaps between the rollers and the wall and to allow easy access to the rollers which due to their composition are fragile and must be frequently replaced by withdrawing said rollers without disrupting the operations utilizing said bearing structure, comprising: a vertical wall with an inside surface and an outside surface and having a throughgoing passage; a supporting block embedded in the wall and extending horizontally away from the outside surface of the wall at right angles; a fixed frame attached to the block which otherwise would be without sufficient strength to support the weight of the wall and thereby supporting the block and the wall, the frame communicating with the passage to form a hollow chamber; a journal block element sahped to be detachably securable within the passage in the wall, the journal block having a throughgoing horizontal bore which is sufficiently large to accomoate a roller end; first means cooperating with the journal block element and the wall to detachably secure the journal block element within the wall in a manner that no gap is formed between the journal block element and the wall; a panel detachably securable to the frame to close off the end of the chamber remote from the wall; and second means detachably securing the panel to the frame; wherein the first means is an insulation material wedged between the wall and the journal block element.

4,225,198

BEARING MOUNT

Eiland K. Presswood, Fort Worth, Tex., assignor to Textron, Inc., Providence, R.I.

Filed Nov. 13, 1978, Ser. No. 959,897
Int. Cl.[2] F16C *23/02*
U.S. Cl. 308—37 7 Claims



1. Apparatus for preloading a bearing having a longitudinal axis, comprising:

a housing having an inner cavity for receiving the bearing;

a bearing race for supporting the bearing in the cavity of said housing:

loading means in contact with the bearing race in the cavity of said housing to preset the force applied to the bearing;

a retainer attached to said housing as an enclosure for the cavity and to position said loading means therein, said retainer including a passage therethrough extending into the cavity;

threaded adjustment means assembled into the passage and engaging said loading means to apply a force against said loading means in a direction transverse to the longitudinal axis of said bearing for positioning said bearing race via the loading washer; and

wherein said loading means includes a wedged loading washer in contact with said bearing race and a wedged driver washer in contact with said retainer; and

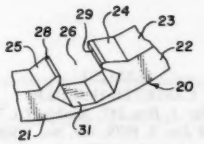
wherein said retainer includes means for orienting said loading washer in the cavity of said housing.

4,225,199

BALL SEPARATOR FOR BALL BEARING

Melvin L. Earsley, 616 E. Slaton Rd., Lubbock, Tex. 79404

Filed Sep. 15, 1978, Ser. No. 942,601
Int. Cl.[3] F16C *33/38*
U.S. Cl. 308—201 14 Claims



1. In a ball separator for use in a ball bearing which includes confronting first and second races, and a plurality of spherical balls coacting with said races; said ball separator including an annular base, and a plurality of annularly spaced fingers projecting generally axially from said annular base to define individual annularly spaced ball pockets; said ball separator having opposite side walls, and being configured to be received between the outer and inner races of said ball bearing with said side walls confronting respective races; each of said ball pockets being formed to partially enclose a respective ball, and having a wall surface configured to provide clearance between the pocket and the ball; the improvement comprising: each ball pocket wall surface comprising a plurality of contiguous surface segments, each providing a tangential ball contact area, and said surface segments defining lubricant retaining recesses between said ball contact areas.

4,225,200

GREASE AND CUP RETAINED UNITIZED THRUST BEARING AND METHOD OF MAKING SAME

Robert K. Dougall, Grand Haven, Mich., assignor to Keene Corporation, New York, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,656
Int. Cl.[2] F16C *33/00*
U.S. Cl. 308—235 21 Claims

1. A grease retained thrust bearing for use in an automotive automatic transmission comprising:

a first generally flat annular race having inner and outer diameters;

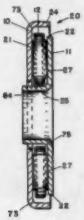
a generally flat annular roller separator having inner and outer diameters;

means for concentrically aligning said first annular race and said annular roller separator;

a plurality of rolling elements disposed in said annular roller separator; and

a first coat of fibrous, tacky, adhesive-like grease therebetween, said first coat of grease being compatible with the working fluid of an automotive automatic transmission,

said first coat of grease adhesively securing together said first annular race, said annular roller separator and said



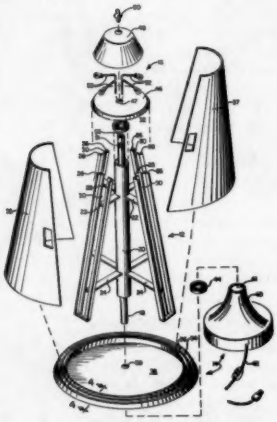
rolling elements, thereby providing a stable assembly for shipping and handling of the bearing.

4,225,201

CASSETTE HOLDER

Donald J. Davis, Rte. 1, Box 247, Bunkie, La. 71322

Filed Jan. 5, 1979, Ser. No. 1,300
Int. Cl.[2] **A47F** *3/10*
U.S. Cl. 312—125 **8 Claims**



1. A cassette holder comprising:

a. a base;

b. a fixed top plate upwardly displaced from said base, said top plate being connected to said base by an elongated, non-rotating axle;

c. a hollow, rotatable support means concentrically and rotatably mounted over said axle for supporting a plurality of diagonally converging cassette holding tracks;

d. a pair of dust shields movably mounted in guiding tracks carried by said base and said fixed top plate, said dust shields being cooperable to complete substantial enclosure of said cassettes; and

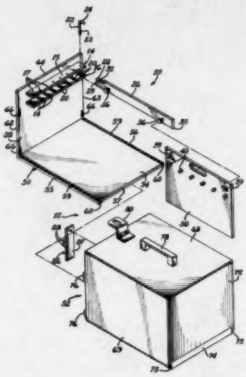
e. light means connected to said axle for illuminating said cassette holder.

4,225,202

APPARATUS FOR SUPPORTINGLY ORGANIZING AND DISPLAYING MISCELLANEOUS ARTICLES

Earl E. Chandler, P.O. Box 1624, Coolidge, Ariz. 85228

Filed Aug. 28, 1978, Ser. No. 937,543
Int. Cl.[2] **A47B** *63/00;* **A47F** *5/08;* **A47B** *96/06*
U.S. Cl. 312—184 **10 Claims**



1. An apparatus for supportingly displaying miscellaneous articles in organized arrays comprising:

(a) a mounting assembly for attachment to a vertical surface, said mounting assembly including an upper plate and a lower plate which are spaced from each other and horizontally disposed in parallel relationship;

(b) at least one elongated cantilever arm demountably pivotably coupled in an on-edge attitude between the upper and lower plates of said mounting assembly so as to be extending therefrom;

(c) means on said mounting assembly and on said cantilever arm for demountable pivotable coupling of said cantilever arm to said mounting assembly;

(d) means on said mounting assembly and on said cantilever arm for yieldably holding said cantilever arm in a position of normally extending from said mounting assembly;

(e) at least one display panel;

(f) complimentary elements of a fastener means on said cantilever arm and on said display panel for demountably suspending said display panel from said cantilever arm;

(g) connector means on said display panel for demountably supporting miscellaneous articles thereon in organized arrays; and

(h) a box having an inwardly facing vertical surface to which said mounting assembly is fixedly attached, said box including,

I. a base having a floor with an integral upstanding end wall to which said mounting assembly is affixed,

II. a cover having a top from which an opposed pair of side walls and an end wall integrally depend, and

III. means on said base and on said cover for demountably coupling said cover to said base.

4,225,203

ENERGY SAVING INNER DOOR DEVICE FOR A REFRIGERATION APPLIANCE

Melvin H. Goodrode, 55 Glen Eyrie Ave., San Jose, Calif. 95125

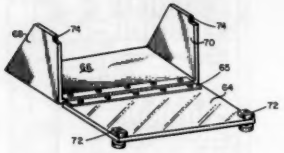
Filed Aug. 30, 1978, Ser. No. 937,948
Int. Cl.[2] **A47B** *97/00;* **A47F** *3/04*
U.S. Cl. 312—236 **3 Claims**

1. A retrofit type energy saving inner door device for a refrigeration appliance having at least an upper and a lower shelf, the device comprising

a substantially rectangular panel means,

a solid, impermeable base means that can be disposed upon an upper surface of said lower shelf to substantially diminish the air flow through said lower shelf,

hinge means connecting an edge of said base means to a first edge of said panel means, said hinge means permitting said panel means to be rotated between a first, closed position in which said panel means substantially extends between the front edges of said upper shelf and said lower



shelf, and second, opened positions in which said panel means does not fully extend between said front edges,

latch means coupled to said panel means proximate a second edge thereof opposing said first edge for releasably engaging said front edge of said upper shelf, whereby said panel means can be retained in said first position, and

handle means attached to said panel means to facilitate a movement of said panel means between said first position and said second positions.

4,225,204

CUPBOARD FOR STORING PREPARED MEALS, WITH COLD-STORAGE AND REHEATING BY MICROWAVES

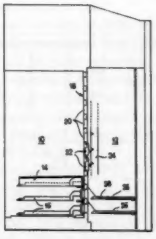
Robert Bellavoine, Plombieres-les-Bains, France, assignor to De Pruines Iseco, Plombieres-les-Bains, France

Filed Jan. 2, 1979, Ser. No. 608

Claims priority, application France, Jan. 10, 1978, 78 00517

Int. Cl.[2] **F25B** *29/00;* **A47B** *77/08*

U.S. Cl. 312—236 **17 Claims**



1. In a cupboard for storing and bringing to suitable temperature prepared meals carried on superposed trays each comprising an inner compartment opening out on a side-wall of the tray, said cupboard comprising

(a) a space for storing said trays;

(b) a chamber for bringing the dishes contained in the inner compartments of said trays to suitable temperature;

(c) individual metallic flaps comprising at least one movable portion provided at the level of each tray for selectively separating and placing said storage space and chamber in communication; and

(d) transporting means for transferring the dishes contained in the inner compartments of the trays towards the chamber for bringing them to suitable temperature and for returning them into the compartments where they were located, after a sequence of bringing to suitable temperature effected in the chamber intended for this purpose.

4,225,205

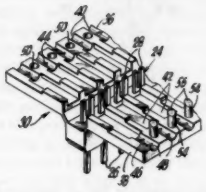
ELECTRICAL CONNECTOR FOR TERMINATING A FLAT CONDUCTOR CABLE

William Y. Sinclair, Frenchtown, N.J., and Joseph Argila, Upper Black Eddy, Pa., assignors to Aries Electronics, Inc., Frenchtown, N.J.

Filed Jan. 15, 1979, Ser. No. 3,628

Int. Cl.[3] **H01R** *11/00, 13/58*

U.S. Cl. 339—59 M **9 Claims**



1. An electrical connector for terminating a flat conductor cable comprising:

a plurality of terminal pins, each having a post portion and a socket portion;

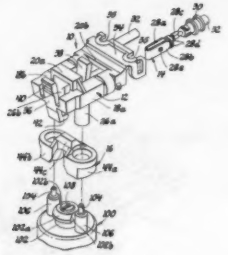
a carrier made of non-electrically conductive material including (1) an elongated bar member having a plurality of parallel apertures extending therethrough for receiving a parallel array of said terminal pins, with the post portion of each terminal pin extending from one side of the bar member while the socket portion thereof extends from the opposite side of the bar member, and (2) two, generally planar cable support members formed unitary with the bar member and hingedly connected thereto, said planar support members being respectively disposed on opposite sides of the array of socket portions of the terminal pins such that after the conductors of the flat conductor cable are connected to said socket portions, the planar support members may be folded over so as to engage the opposed sides of the flat conductor cable, with the side of each said planar cable support member which engages the flat conductor cable including a plurality of elongated parallel grooves, the cross-sections of which are smaller than the cross-sections of the conductor portions of the flat conductor cable such that strain relief is provided by the interference fit between the planar cable support members and the flat conductor cable, and wherein ribs extending transverse to the longitudinal axes of said parallel grooves are provided in said grooves, the ribs in the opposed generally planar cable support members being located for engaging the individual conductors of the flat conductor cable in staggered relationship to thereby provide strain relief; and

means for securing said two generally planar cable support members in folded-over position against the opposite surface of said flat conductor cable, said means including in one cable support member a plurality of holes, while the other planar support member includes a plurality of projections, said projections upon assembly of the electrical connector extending through the insulation carrier material intermediate the conductors of said flat conductor cable and into said holes to engage the opposed planar support member thereby providing strain relief to the connector.

4,225,206
ELECTRICAL CONNECTOR FOR ELECTROMAGNETIC FUEL INJECTOR

Michael J. Roman, Jr., Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1979, Ser. No. 64,014
Int. Cl.[3] H01R *13/20*
U.S. Cl. 339—91 R 3 Claims



1. An electrical connector for an electrical device having a pair of upstanding pin terminals located on opposite sides of and radially spaced from an upstanding central boss, comprising:

a connector body having a pair of longitudinal, laterally spaced terminal housings each having a depending vertical socket which is laterally spaced from and parallel to the depending socket of the other terminal housing,

said connector body further comprising an integral bridge connecting the terminal housings and a pair of longitudinally spaced, vertical latch arms disposed between the terminal housings, and pivotally connected to the terminal housings forwardly and rearwardly of the bridge respectively,

a pin grip terminal disposed in each terminal housing for engaging a pin terminal means received in the terminal housing via its associated socket, and

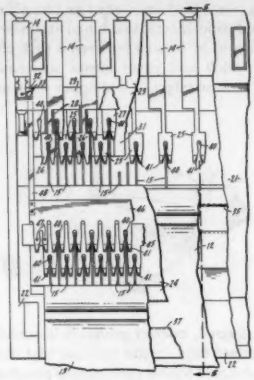
a seal member comprising a pair of laterally spaced elastomeric sleeves connected by an integral saddle at one end, said sleeves being mounted on and sealingly engaging the depending sockets respectively, each sleeve having an inward circular sealing lip which is adjacent an open end of its associated socket and which projects radially inwardly of the associated socket passage for sealing around pin terminal means inserted into the associated socket.

4,225,207
CONVERTIBLE CABLE-CONNECTOR ASSEMBLY

Edward P. Brandeau, Willimantic, Conn., and John M. Gentry, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 29, 1979, Ser. No. 25,283
Int. Cl.[3] H01R *4/10*
U.S. Cl. 339—95 R 2 Claims

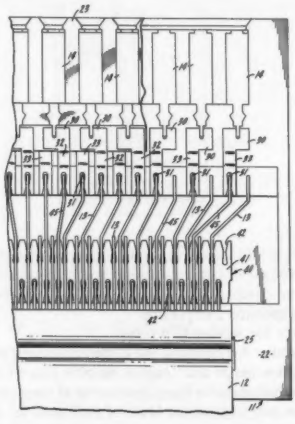
1. A cable-connector assembly comprising, in combination, a housing, an upper and a lower array of pin sockets having plate members disposed in said housing, a ground bus plate member disposed in said housing intermediate said two arrays of sockets, a flat cable having a plurality of wires spaced in one plane, all of said plate members being slotted to a width somewhat narrower than the width of one of said wires, said slots being in the three planes of the socket plate members and the bus plate member and being spaced laterally at the spacing of the wires in the cable, the ends of said wires being forced longitudinally into respective ones of said slots, and means to lock said cable to said housing.



4,225,208
CABLE-CONNECTOR ASSEMBLY WITH HIGH DENSITY GROUND TERMINAL

Edward P. Brandeau, Willimantic, Conn., and John M. Gentry, Asheville, N.C., assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 29, 1979, Ser. No. 25,284
Int. Cl.[3] H01R *4/10*
U.S. Cl. 339—95 R 2 Claims



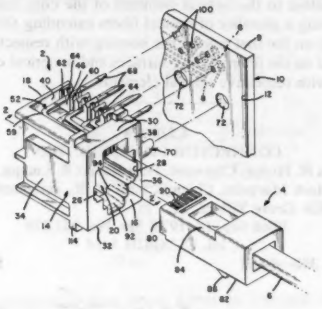
1. In a wire termination assembly, a plate member for terminating a plurality of parallel wires from a cable, comprising an elongated body having opposite termination edges, each of said edges being slotted in an hour-glass shape with the pinched portion of said shape having a width somewhat narrower than the wires to be received, said slots at the opposite edges being offset with respect to one another.

4,225,209

ELECTRICAL CONNECTOR RECEPTACLE

Donald W. K. Hughes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 18, 1979, Ser. No. 40,242
Int. Cl.[3] H02B 1/04; H05K 1/10
U.S. Cl. 339—126 R 10 Claims



1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and opposed internal endwalls, said housing having oppositely directed external sidewalls and oppositely directed external endwalls, a plurality of electrical conductors in side-by-side spaced-apart relationship, each of said conductors comprising a contact spring portion extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said plug-receiving opening and towards the opposite internal sidewall, and each conductor having a lead portion extending from said plug-receiving end towards said rearward end and externally of said housing, said plug-receiving opening being dimensioned to receive a connector plug having spaced-apart contact members therein which engage said contact spring portions of said conductors, said connector receptacle being characterized in that:

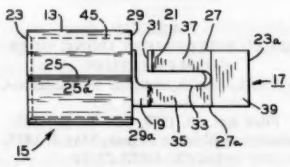
said lead portions of said conductors extend from said plug-receiving end partially across the external sidewall which is adjacent to said one internal sidewall, said lead portions being bent laterally at locations between said ends of said housing and extending towards and beyond one of said endwalls, said conductors having end portions projecting beyond said one endwall which are adapted to be mounted in a circuit board.

4,225,210

TERMINAL AND METHOD OF MAKING

Donald L. Haag, Sterling, and Lee O. Woods, Morrison, both of Ill., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 761,584, Jan. 24, 1977, Pat. No. 4,131,871. This application Aug. 28, 1978, Ser. No. 937,506
Int. Cl.[3] H01R 13/12
U.S. Cl. 339—258 R 14 Claims



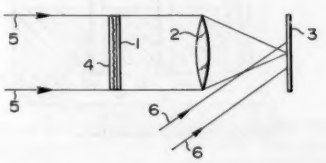
1. A terminal adapted to releasably receive a male terminal and adapted to be connected in electrical engagement with an electrical component, the terminal comprising an integral body of sheet material having good electrical conductive properties; a pair of opposite end edges on said body; a first pair of side edges on said body intersecting with one of said opposite end edges; a second pair of side edges on said body intersecting with the other of said opposite end edges; a pair of shoulders on said body extending between said first side edge pair and said second side edge pair so as to intersect therewith, respectively; said body including an electrical connection section adapted to releasably receive the male terminal in the electrical engagement, and a supporting section adapted to be connected in the electrical engagement with the electrical component; said electrical connection section including a split sleeve portion formed generally between said one opposite end edge and said shoulder pair with said first side edge pair disposed generally in opposed relation with each other so as to provide an opening within said split sleeve section into which the male terminal may be inserted into the releasable electrical engagement with said electrical connector section; said supporting section including slot means therein and having first and second intersecting slot portions extending generally in different directions, said first slot portion having a pair of opposite ends respectively terminating generally adjacent said shoulder pair and said other opposite end edge and being disposed at least in part between said second side edge pair so as to form therebetween a pair of oppositely disposed generally elongated legs and a distal end portion joining said leg pair generally between one of said opposite ends of said first slot portion and said other opposite end edge on said supporting section, said second slot portion being disposed generally adjacent said shoulder pair so as to intersect with said first slot portion at least adjacent the other of said opposite ends thereof and extending from said first slot portion so as to intersect one of said side edges of said second side edge pair thereby to form a free end portion on one of said legs spaced generally in closer relation with said electrical connector section than with said other opposite end edge and adapted for the electrical engagement with the electrical component.

4,225,211

RANDOM PHASE PLATE FOR HOLOGRAPHY AND PROCESS FOR MANUFACTURING SAME

Michiharu Abe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 796,310, May 12, 1977, abandoned, which is a continuation of Ser. No. 653,776, Jan. 30, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,220
Claims priority, application Japan, Jan. 30, 1975, 50-13091
Int. Cl.[2] G03H 1/16
U.S. Cl. 350—3.82 4 Claims



3. A random phase holographic plate, comprising a transparent substrate and a transparent polyvinyl butyral coating on the substrate in which the thickness H of the coating varies in a continuous and random manner over the random phase plate relative to light of a wavelength λ such that

$$\exp -4\pi^2(n-n_0)^2\sigma_h^2/\lambda^2 \leqq 0.10$$

where

h_m is a mean value of H, $h=H-h_m$;

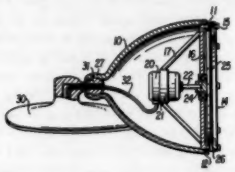
σ_h is a standard deviation of h;

n is a refractive index of the coating material for light of the wavelength λ;
n_o is a refractive index of air for light for the wavelength λ; and
exp indicates exponentiation.

4,225,212
OUTSIDE REAR VISION MIRROR

Werner Grabowski, 6309 Steinway St. (Franconia), Alexandria, Va. 22310

Filed Jun. 2, 1978, Ser. No. 911,839
Int. Cl.[3] G02B *7/18*
U.S. Cl. 350—62 **3 Claims**

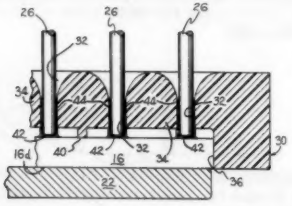


1. A rear-vision mirror assembly which comprises a mirror, a supporting member for said mirror, a casing having an opening at its rear for connectably receiving said supporting member whereby said supporting member is connected to said casing by connecting means disposed only at said casing's rear, a motor for rotating said mirror surrounded by said casing, said motor being mounted solely on said supporting member, said supporting member including a bearing for supporting said mirror on a shaft extending from said mirror into said bearing, a further shaft from said motor being rigidly connected to said first mentioned shaft, said motor and said mirror being removable as a unit from said casing by the disconnection of said connecting means only.

4,225,213
CONNECTOR APPARATUS

Lyle E. McBride, Jr., Norton, and Richard G. Delagi, Sharon, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 23, 1977, Ser. No. 863,758
Int. Cl.[2] G02B *5/14*; H01L *31/12*
U.S. Cl. 350—96.20 **15 Claims**

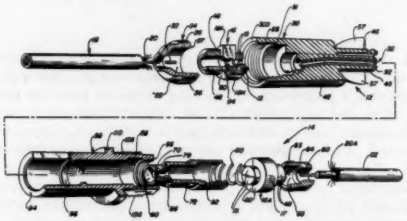


1. Apparatus for interfacing between an electronic circuit and optical fibers comprising a housing composed of electrically insulative plastic material having a first side with an aperture therethrough and a second side with at least one row of apertures therethrough, a lead frame mounted in the housing, the lead frame including a plurality of electrically conductive elements having first and second end portions, the first end portion formed into terminal configurations, each terminal configuration aligned with a respective aperture in the second side of the housing, a relatively massive thermally and electrically conductive pad disposed on the second end portion of one of the lead frame elements, a semi-conductor chip bonded to the pad, the chip having a plurality of optical elements, each optical element having a bonding pad, electrically conductive leads connecting each bonding pad with a respective second end portion of the other lead frame elements, a guide plate formed of moldable plastic material overlying the chip, the plate having fiber guiding surfaces formed therein and having indexing surfaces for properly locating the fiber guiding surface relative to the optical elements of the chip, and a cable comprising a plurality of optical fibers extending through the aperture on the first side of the housing with respective fibers received on the fiber guiding surfaces and in optical communication with respective optical elements.

4,225,214
CONNECTOR CONSTRUCTION

Malcolm H. Hodge, Claymont, Del.; Robert E. Lumpp, Addison, and Mark Margolin, Chicago, both of Ill., assignors to TRW Inc., Elk Grove Village, Ill.

Filed Sep. 18, 1978, Ser. No. 943,470
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.21 **15 Claims**



1. A connector for connecting the ends of optical fibers comprising a connector receptacle; optical fiber guide means mounted therein having opposed entranceways and a fiber-receiving passageway of such size as to readily receive such fiber ends therein; said passageway having a track means whereby optical fiber ends disposed thereon may be axially aligned, spaced portions of said guide means being formed whereby optical fibers entering said opposed entranceways are biased onto said track means; a receptacle portion in encompassing relation with said fiber guide means; a terminal end of said guide means defining an end receptacle portion in spaced relation with an encompassing receptacle shell portion; a connector plug comprising a housing having optical fiber clamp means mounted therein; retractable, fiber-encompassing means reciprocally movable in said plug housing relative to said clamp means; said fiber encompassing means having a fiber locating means at one end and a relieved inner portion communicating with said locating means whereby a fiber portion entering said locating means from the interior of said fiber-encompassing means may readily bend; said receptacle fiber guide terminal end being telescopically received in a terminal end of said plug housing whereby said fiber encompassing means is engaged thereby and forced to retract toward said clamp means.

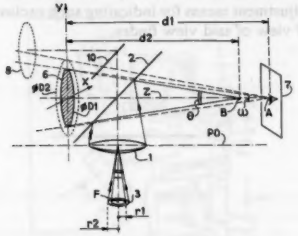
4,225,215
DISPLAY INSTRUMENT USING OPTICAL COLLIMATION

Yves Cojan, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 28, 1978, Ser. No. 901,207
Claims priority, application France, May 3, 1977, 77 13343
Int. Cl.[2] G02B *27/14*
U.S. Cl. 350—174 **10 Claims**

1. A display instrument using optical collimation for projecting data in the form of luminous marks into the observer's

normal line of sight, said instrument comprising: luminuous objects representing said data, an optical objective for projecting an image of said objects to infinity, a combining glass formed by a first plane semi-transparent mirror for reflecting said projected image into said line of sight, and optical means for enlarging the original optical pupil as defined by the outline of the image of the objective through the combining glass, by producing an additional optical pupil which, in conjunction



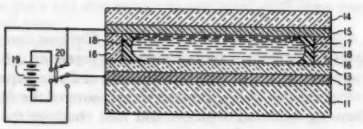
with the original optical pupil, forms an enlarged resultant pupil, said optical means for enlarging comprising a second plane semi-reflective glass which is arranged parallel to said first glass at a greater distance from the objective and on the opposite side of said combining glass from said optical objective and which causes by transmission through said combining glass and reflection on said second semi-reflective glass said original optical pupil to be enlarged in elevation.

4,225,216

TUNGSTEN NIOBATE ELECTROCHROMIC DEVICE

Gary D. Boyd, Rumson; Ross A. Lemons, Tinton Falls; James C. Phillips, Summit; Joseph P. Remeika, Warren Township, Somerset County, and Edward G. Spencer, Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 21, 1979, Ser. No. 13,385
Int. Cl.[3] G02F *1/17, 1/23*
U.S. Cl. 350—357 **8 Claims**



1. An electro-optical device comprising an electrochromic material, an electrolyte ion source in contact with at least a portion of a surface of said material, and means for producing an electric field across said portion to induce color change in said electrochromic material CHARACTERIZED IN THAT said material consists essentially of a single or polycrystalline tungsten niobate represented by the formula $(9WO_3)_{1+X}(4Nb_2O_5)_{1-X}$ where X is a number in the range of -0.02 to $+0.02$.

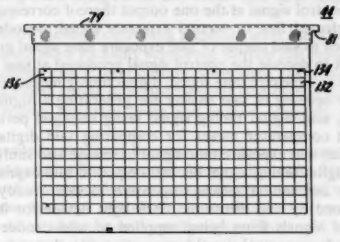
4,225,217

FILM CARD WITH REFERENCE FRAME

David L. Smith, Atlanta, Ga., assignor to Computer Microfilm International Corporation, Atlanta, Ga.

Filed Apr. 10, 1978, Ser. No. 895,155
Int. Cl.[3] G03B *21/00*
U.S. Cl. 353—120 **2 Claims**

1. In a film card having horizontal and vertical edges and containing a plurality of frames of film images arranged in rows and columns within a photographic area, said frames having accurate frame to frame locations and less accurate frame to film edge locations, each of said frames comprising an image area and having an identical marker image within said image area, and adapted to be used with a film reading apparatus having an adjustable image sensing position, said apparatus being responsive to the detected horizontal and vertical location of said marker image associated with each frame of images for adjusting the location of said image sensing position with



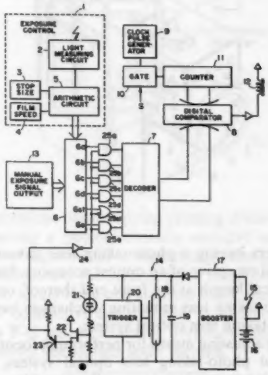
respect to said film, the improvement wherein one of said frames is a reference frame and includes only said marker image, whereby said film reading apparatus can detect the location of said marker image associated with said reference frame without interference from an information-containing frame image.

4,225,218

EXPOSURE TIME CONTROL CIRCUIT FOR CAMERA WITH FLASH LIGHT DEVICE

Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed Jan. 12, 1979, Ser. No. 3,040
Int. Cl.[3] G03B *15/05, 7/00*
U.S. Cl. 354—23 D **5 Claims**



1. Exposure time control apparatus for a photographic camera of the type provided with an electronic flash light device having means for producing a "ready" signal when said electronic flash light device is in condition to be triggered to emit a flash of light in response to operation of the shutter mechanism of said photographic camera, said exposure time control apparatus comprising light measuring means for measuring the brightness of a scene and for producing a brightness signal representing the measured brightness; means for producing a signal representing the sensitivity of the photographic film in said camera; means for producing a signal representing the stop size selected for said camera; combining means for combining said signals representing measured brightness, film sensitivity and stop size to produce a first exposure signal representing the

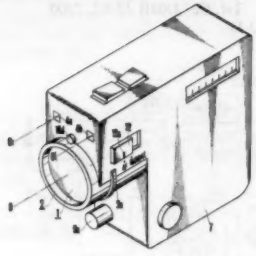
duration for which the shutter of said camera should remain open to expose said photographic film; manually operable exposure means for producing a second exposure signal; an exposure time signal generating circuit having a plurality of outputs, each adapted to provide a respective control signal, said exposure time signal generating circuit being selectively responsive to said first or second exposure signal to produce said control signal at the one output thereof corresponding to the selected first or second exposure signal; decoder means coupled to said output of said exposure time signal generating circuit to decode the control signal produced at said one output to an exposure time signal; digital timing means responsive to the opening of said shutter for generating a digital timing signal, said digital timing signal being changed periodically; digital comparator means for comparing said digital timing signal to said exposure time signal to release said shutter when said digital timing signal becomes equal to said exposure time signal; and inhibit means responsive to said "ready" signal produced by said electronic flash light device for inhibiting control signals from being supplied to said decoder means except for a control signal representing a predetermined duration for which said shutter should remain open to expose said photographic film to the scene illuminated by said flash of light, whereby said decoder means supplies to said digital comparator means an exposure time signal indicative of said predetermined duration.

4,225,219

CAMERA WITH AUTOFOCUSING DEVICE

Ichiro Shimizu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,871
Claims priority, application Japan, Dec. 26, 1977, 52/159116
Int. Cl.³ G03B *13/22, 17/18*
U.S. Cl. 354—25 **13 Claims**



1. A camera having a photo-taking lens mounting mechanism which is receptive of an optical accessory for effecting a change in focal length at the front end thereof, comprising:

(a) a photo-taking lens mounting mechanism having:

a photo-taking lens optical system;

focusing adjusting means for performing focus adjustment of said photo-taking lens optical system, said focus adjusting means being manually operable; and

coupling means for selectively mounting and de-mounting said optical accessory;

(b) a view finder;

(c) automatic focus adjustment means for automatically detecting a distance from the camera to an object to be photographed and for automatically controlling the operation of said focus adjusting means, said automatic focus adjustment means having:

a distance measuring optical system arranged on an optical axis different from the optical axis of said photo-taking lens optical system;

control circuit means responsive to a signal representative of the distance from said distance measuring optical system for producing a control signal; and

drive means responsive to the control signal from said control circuit means for driving, said drive means being operatively connected to said focus adjusting means; and

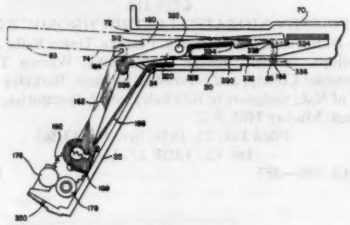
(d) detecting and changeover means responsive to the detection of the presence of said optical accessory at said coupling means for operatively excluding the operation of said automatic focus adjustment means, said detecting and changeover means including display means cooperative with the exclusion of the operation of said automatic focus adjustment means for indicating such exclusion in the field of view of said view finder.

4,225,220

CAMERA HAVING MANUALLY OPERABLE DARK SLIDE EJECTION APPARATUS

Lawrence M. Douglas, South Easton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 893,487, Apr. 4, 1978. This application Sep. 4, 1979, Ser. No. 72,488
Int. Cl.³ G03B *17/50, 1/00, 17/04*
U.S. Cl. 354—86 **7 Claims**



1. A hand-held camera for exposing a film unit comprising:

means for defining a film chamber for receiving a film cassette containing at least one film unit and an opaque cover sheet for preventing premature exposure of the film unit;

a housing mounted adjacent said film chamber for movement between a first position wherein it prevents loading of the film cassette into said film chamber and a second position wherein the film cassette may be inserted into said film chamber;

means operatively disposed within said film chamber for initially engaging and limiting the degree of insertion of the film cassette into said film chamber to a first location, said operatively disposed means being movable out of limiting engagement with the film cassette in response to movement of said housing toward said first position;

film cassette positioning means engageable with the film cassette within said film chamber after said housing has been moved into said first position;

manually operable means drivably connected to said film cassette positioning means for moving the film cassette from said first location to a second location within said film chamber; and

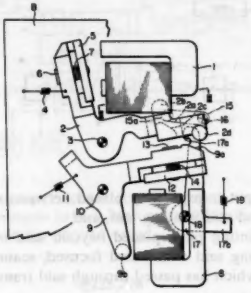
film advancing means operable during movement of the film cassette toward said second location for engaging and moving the opaque cover sheet away from covering relationship with the film unit in preparation for the exposure of the film unit.

4,225,221

COCKING MECHANISM FOR ELECTRIC SHUTTERS

Toshihisa Saito, Tokyo, and Nobuyoshi Inoue, Kawagoe, both of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,946
Claims priority, application Japan, Dec. 1, 1977, 161654[U]; Dec. 1, 1977, 16155[U]
Int. Cl.³ G03B 9/08, 9/66, 17/38
U.S. Cl. 354—234 1 Claim



1. A cocking mechanism for electric focal plane shutters, comprising:

a base plate;

a shutter opening-controlling electromagnet fixed on said base plate and able to make an energized state and a deenergized state;

a shutter opening-controlling armature lever rotatably supported on said base plate and able to take a cocked position in which it contacts said shutter opening-controlling electromagnet and an uncocked position in which it is separated from said shutter opening-controlling electromagnet;

a first spring connected between said base plate and shutter opening-controlling armature lever and biasing said shutter opening-controlling armature lever to separate from said shutter opening-controlling electromagnet;

a shutter closing-controlling electromagnet fixed on said base plate and able to take an energized state and a deenergized state;

a shutter closing-controlling armature lever rotatably supported on said base plate and able to take a cocked position in which it contacts said shutter closing-controlling electromagnet and an uncocked position in which it is separated from said shutter closing-controlling electromagnet;

a second spring connected between said base plate and shutter closing-controlling armature lever and biasing said shutter closing-controlling armature lever to separate from said shutter closing-controlling electromagnet;

a cocking lever rotatably supported on said base plate and engageable with said shutter opening-controlling armature lever to bring said shutter opening-controlling armature lever into its cocked position from its uncocked position; and

a release lever rotatably supported on said base plate and engageable with said shutter opening-controlling armature lever;

said shutter closing-controlling armature lever being engageable with said shutter opening-controlling armature lever and being brought into its cocked position from its uncocked position by said shutter opening-controlling armature lever when said shutter opening-controlling armature lever is brought into its cocked position from its uncocked position; and

said shutter closing-controlling armature lever being held in its cocked position by said shutter opening-controlling armature lever when said shutter opening-controlling armature lever is locked in its cocked position by said release lever;

said shutter opening-controlling armature lever having a first armature piece rockably supported thereon and capable of contacting said shutter opening-controlling electromagnet and a third spring provided between said shutter opening-controlling armature lever and first armature piece;

said shutter closing-controlling armature lever has a second armature piece rockably supported thereon and capable of contacting said shutter closing-controlling electromagnet and a fourth spring provided between said shutter closing-controlling armature lever and second armature piece; and

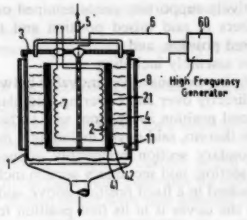
a clearance is produced between said shutter opening- and closing-controlling armature lever when said first and second armature pieces are respectively attracted to said shutter opening- and closing-controlling electromagnets and when said release lever disengages from said shutter opening-controlling armature lever.

4,225,222

PRINTING DRUM FOR AN ELECTROSTATIC IMAGING PROCESS WITH A DOPED AMORPHOUS SILICON LAYER

Karl Kempter, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 17, 1978, Ser. No. 952,066
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1977, 2746967
Int. Cl.³ G03G 5/082, 15/30
U.S. Cl. 355—3 DR 2 Claims



1. An electrostatic photocopying printing drum comprising:

a drum having a photoelectrically sensitive surface layer thereon of light-sensitive electrically chargeable amorphous silicon, and the surface layer being doped so as to form two layers lying one atop the other, one of which is doped P conductive and the other N conductive so as to create a P-N junction running parallel to surfaces of the drum having the surface layer thereon.

4,225,223

EASEL ARRANGEMENT AND METHOD

George M. Papadakis, 12 Angello Ter., Grover City, Calif. 93433

Filed May 10, 1979, Ser. No. 37,890
Int. Cl.³ G03B 27/58, 27/44
U.S. Cl. 355—74 19 Claims

1. An easel arrangement especially suitable for making a plurality of individual prints on a single sheet of photographic print paper, said arrangement comprising:

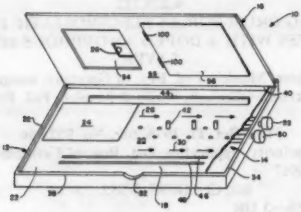
(a) means defining a horizontally extending, fixed planar surface of sufficient size to support said single sheet for movement thereon along first and second straight line predetermined paths parallel with one another;

(b) means fixed in the horizontal direction relative to said surface and engagable with said sheet for guiding the latter along either of said paths, said guide means including first and second longitudinally extending guide members respectfully located parallel with and on opposite sides of said first and second paths and means for supporting each of said first and second guide members in a first raised position extending up from said planar surface for engaging a side edge of said sheet during movement of the latter along its adjacent path and a second lowered position so as not to extend up from said surface;

(c) means for locating said sheet in a number of different predetermined positions along each of said paths, said locating means including

(i) a plurality of stop members and

(ii) means for supporting each of said stop members in a first raised position for engaging a leading edge of said sheet when the latter moves into a predetermined one of said positions during its movement along each of said paths, thereby indicating that said sheet is in said one position, and a second lowered position out of engagement with said leading edge, said supporting means



selectively supporting predetermined ones of said stop members in said raised position and the rest in said lowered position, and

(d) a cover assembly including

(i) a light impervious cover movable between a first position directly over and covering said planar surface and a second position away from said surface for allowing access thereto, said cover including a main section and a secondary section removably connected with said main section, said secondary section including an opening located in a fixed position above said planar surface when the cover is in its first position for passing light therethrough, whereby to develop a different portion of said sheet of photograph print paper at each of said predetermined positions for making said plurality of prints, and

(ii) focusing plate means movable between a first position for closing said opening through the secondary section of said cover when the latter is in its first position for substantially preventing any ambient light from reaching said planar surface and a second position away from said opening.

4,225,224

PROCESS AND APPARATUS FOR LASER ILLUMINATION OF PRINTING PLATES

N. Balasubramanian, Saratoga, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1979, Ser. No. 20,145

Int. Cl.[3] G01D *9/32*; G03B *27/44*; G11B *7/00*

U.S. Cl. 355—77 **8 Claims**

1. A laser printing and projection system comprising in combination:

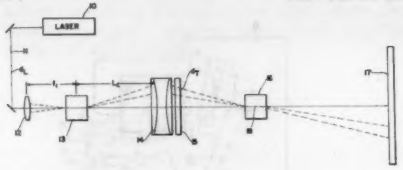
(a) a laser beam light source;

(b) a first lens for focusing the culminated beam from the laser;

(c) an X-Y galvo-deflection system having an apparent scan center for deflecting said focused, culminated beam from said first lens;

(d) a second condensing lens for receiving the deflected focused culminated light from said X-Y galvo-deflection system;

(e) a third imaging lens for receiving the light from said second condensing lens;



(f) an input transparency placed between said culminating lens and said imaging lens; and

(g) a printing plate placed beyond said imaging lens for receiving said culminated focused, scanned and imaged light which has passed through said transparency.

4,225,225

HIGH REGISTRATION PHOTOMASK MACHINE AND COMPUTERIZED NUMERICAL CONTROL SYSTEM

Gilbert P. Hyatt, P.O. Box 4584, Anaheim, Calif. 92803

Continuation-in-part of Ser. No. 879,293, Nov. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 101,881, Dec. 28, 1970, and a continuation-in-part of Ser. No. 134,958, Apr. 19, 1971, and a continuation-in-part of Ser. No. 135,040, Apr. 19, 1971, and a continuation-in-part of Ser. No. 229,213, Apr. 13, 1972, Pat. No. 3,820,894, and a continuation-in-part of Ser. No. 230,872, Mar. 1, 1972, and a continuation-in-part of Ser. No. 232,459, Mar. 7, 1972, and a continuation-in-part of Ser. No. 246,867, Apr. 24, 1972, and a continuation-in-part of Ser. No. 288,247, Sep. 11, 1972, Pat. No. 4,121,284, and a continuation-in-part of Ser. No. 291,394, Sep. 22, 1972, and a continuation-in-part of Ser. No. 302,771, Nov. 1, 1972, and a continuation-in-part of Ser. No. 325,933, Jan. 22, 1973, Pat. No. 4,016,540, and a continuation-in-part of Ser. No. 325,941, Jan. 22, 1973, Pat. No. 4,060,848, and a continuation-in-part of Ser. No. 366,714, Jun. 4, 1973, Pat. No. 3,986,022, and a continuation-in-part of Ser. No. 727,330, Sep. 27, 1976, abandoned, and a continuation-in-part of Ser. No. 339,688, Mar. 9, 1973, and a continuation-in-part of Ser. No. 402,520, Oct. 1, 1973, and a continuation-in-part of Ser. No. 476,743, Jun. 5, 1974, and a continuation-in-part of Ser. No. 752,751, Dec. 20, 1976, Pat. No. 4,120,583, and a continuation-in-part of Ser. No. 752,240, Dec. 20, 1976, abandoned. This application Oct. 12, 1978, Ser. No. 950,901

Int. Cl.[2] G03B *27/02*

U.S. Cl. 355—78 **10 Claims**

1. A high registration photographic exposure system comprising:

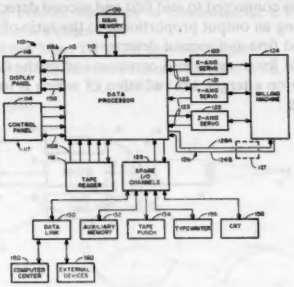
a command device for generating an input command signal;

an integrated circuit read only memory for storing command information;

an integrated circuit alterable memory for storing processed information;

a processor for processing the information stored in said alterable memory in response to the input command signal from said command device under control of the command information stored in said read only memory;

a control circuit for generating a control signal in response to the processing of information with said processor; and



a high registration machine for generating a plurality of contact exposures having high registration therebetween in response to the control signal.

4,225,226

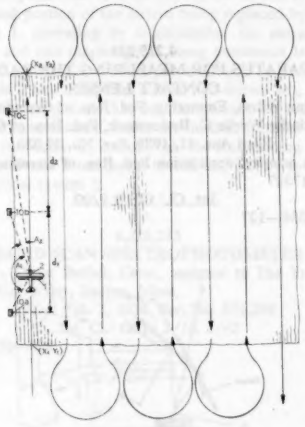
LASER GUIDANCE SYSTEM FOR CROP SPRAYING AIRCRAFT

Richard W. Davidson, Vandalia, Ohio; Joseph F. Rando, Cupertino, Calif., and Ted L. Teach, Dayton, Ohio, assignors to Spectra-Physics, Inc., Mountain View, Calif.

Filed Dec. 29, 1978, Ser. No. 974,369

Int. Cl.³ G01C *3/00, 21/00*

U.S. Cl. 356—1 **4 Claims**



1. A method of guiding crop spraying aircraft in a desired path across a field, comprising the steps of:

a. locating a plurality of laser reflectors in a linear array in the vicinity of the field with a known spacing between such reflectors;

b. emitting from the aircraft a laser beam, fan-shaped in a vertical plane and rotating about a vertical axis, thereby periodically traversing said reflectors;

c. receiving on the aircraft the laser beams reflected from said reflectors;

d. determining the angular relationship between the reflected laser beams from each successive reflector;

e. continuously computing from said angular relationships the horizontal position of the aircraft relative to said reflectors; and

f. continuously comparing the actual horizontal position of the aircraft with a desired horizontal position and generating signals representing any differences therebetween, whereby the aircraft can be returned to the desired horizontal position relative to said reflectors by an aircraft operator utilizing said signals.

4,225,227

MULTIPLE SPEED STROBOSCOPE DEVICE

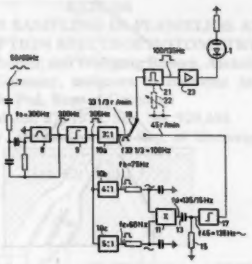
Alfred Seitz, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 24, 1978, Ser. No. 954,261

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748704

Int. Cl.³ G01P *3/40*

U.S. Cl. 356—23 **8 Claims**



3. A stroboscope device for monitoring at least two different nominal speeds, the higher nominal speed being a non-integral-multiple of the lower speed, comprising a single stroboscope pattern, and a light pulse means for illuminating the pattern, said means including

means for generating a master frequency from a given frequency,

divider means for generating a pulse frequency from said master frequency,

a light pulse generator arranged for illuminating the stroboscope pattern, and

means for applying a train of current pulses at said pulse frequency to the light pulse generator for optical comparison of the pattern speed with said nominal speeds.

4,225,228

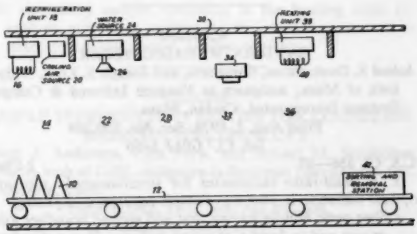
SURFACE COATING FOR OPTICAL INSPECTION

Paul L. DiMatteo, Huntington, N.Y., assignor to Solid Photography Inc., Melville, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,300

Int. Cl.³ G01N *1/00*

U.S. Cl. 356—36 **12 Claims**



1. A method for optical inspection of a surface, comprising the steps of: cooling the surface below a predetermined temperature; spraying the surface with water; forming a refrigerated layer of water on said surface to provide a surface of

predetermined characteristics for optical inspection; inspecting said surface optically while said refrigerated layer is present; and raising the temperature of said surface to remove said refrigerated layer.

4,225,229

APPARATUS FOR MEASURING CYTOLOGICAL PROPERTIES

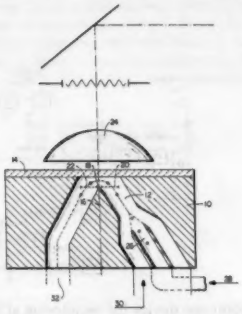
Wolfgang Göhde, Stauffenbergstrasse 40, 4400 Münster, Fed. Rep. of Germany

Filed Mar. 6, 1978, Ser. No. 883,661

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1977, 2709399

Int. Cl.³ G01N *1/10, 21/64, 33/48*

U.S. Cl. 356—39 **13 Claims**



1. A flow chamber for use in an optical system for detecting characteristics of cells suspended in a liquid, particularly for observation of the fluorescence characteristics of the cells upon excitation thereof by light sources having different wavelengths, comprising

a body having a transparent wall portion; and

means in said body for defining a flow passage through which the liquid and cells can pass, said flow passage having first and second passage portions intersecting at said wall portion and forming an angle therebetween of significantly less than 180°;

said means including an edge defining a knee between said first and second portions, said edge being spaced from said transparent wall portion and lying in a plane extending across said first and second passage portions, so that cells in liquid flowing through said passages pass through said plane in one direction toward said wall portion and through said plane in the other direction away from said wall portion on opposite sides of said edge whereby the fluorescence characteristics of the cells can be stimulated and observed through said wall portion as they pass in said respective directions through said plane.

4,225,230

BAND-RATIO RADIOMETER

Ashod S. Dostoomian, Stoughton, and Joseph S. Lord, Walpole, both of Mass., assignors to Vanzetti Infrared & Computer Systems Incorporated, Canton, Mass.

Filed Aug. 2, 1978, Ser. No. 930,268

Int. Cl.³ G01J *5/60*

U.S. Cl. 356—45 **2 Claims**

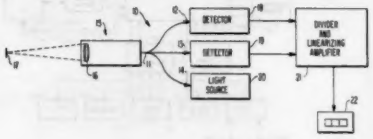
1. A band-ratio radiometer for simultaneously measuring optical radiation in two wavelength regions, comprising:

a fiber optic bundle having first and second branches joined at one end to form a common end, the fiber ends of each branch being interspersed in said common end, and the optical fibers of said first branch having a different wavelength transmittance than that of the optical fibers of said second branch;

first and second detectors proximate to the branch ends of said first and second branches respectively of the fiber optic bundle;

means connected to said first and second detectors for generating an output proportional to the ratio of the outputs of said first and second detectors;

means for imaging said common end of the fiber optic bundle on a target, the radiation of which is to be measured; and



a third branch joined with said at least two branches at said common end, the fiber ends of said third branch being interspersed in said common end with the fiber ends of said at least two branches, said radiometer further comprising a light source proximate to the branch end of said third branch so that the light from said light source is projected on a target whereby imaging of said common end on the target can be accomplished without parallax.

4,225,231

APPARATUS FOR MEASURING THE RADII OF CONTACT LENSES

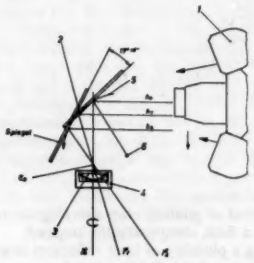
Karl-Heinz Wilms, Emmering, Fed. Rep. of Germany, assignor to Optische Werke G. Rodenstock, Fed. Rep. of Germany

Filed Apr. 11, 1979, Ser. No. 29,030

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817327

Int. Cl.² G01B *9/00*

U.S. Cl. 356—127 **9 Claims**



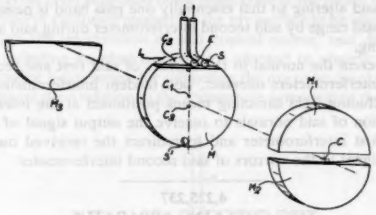
1. Apparatus for measuring the radii of contact lenses comprising means for mounting a contact lens to be measured, and mirror means for directing a measuring beam emitted from an optical radius-measuring means to the contact lens to be measured, the optical radius-measuring means having an optical axis which is located at different height positions during measurement of the contact lens, the mirror means being movable so that the optical axis of the radius-measuring means passes through the area of the center of curvature of the contact lens surface to be measured.

4,225,232

PHOTOMETRIC CELL

Gilbert Boisde, Bures-sur-Yvette, and Alain Boissier, Marly le Roi, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 19, 1979, Ser. No. 21,698
Claims priority, application France, Mar. 30, 1978, 78 09256
Int. Cl.[3] G01N 1/10
U.S. Cl. 356—246 3 Claims



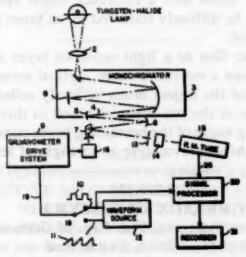
1. A photometric cell of the type comprising two juxtaposed spherical half-mirrors M_1 and M_2 and a third spherical mirror M facing mirrors M_1 and M_2, the three mirrors having the same radius of curvature, whilst mirrors M_1 and M_2 have their centres of curvature C_1 and C_2 located on mirror M and slightly displaced with respect to one another and mirror M has its centre of curvature C between the two mirrors M_1 and M_2, optical means being provided for introducing a measuring light beam into the cell through an entrance diaphragm E and for extracting it therefrom after multiple reflections on said mirrors through an exit diaphragm S, wherein the mirror M is truncated perpendicular to a line joining the centres C_1 and C_2, the truncated portion of the mirror being replaced by an optical system L operating by transmission, the entrance diaphragm E and exit diaphragm S being positioned level with said optical system L on a line perpendicular to lines C_1–C_2, and wherein it also comprises a third half-mirror M_3, the optical system L being such that the half-mirrors M_1 and M_3 are conjugate to one another, whilst the third half-mirror M_3 has a centre of curvature C_3 located on the line joining the two diaphragms E and S conjugate to one another by the mirrors and the optical system L.

4,225,233

RAPID SCAN SPECTROPHOTOMETER

Kenneth L. Ogan, Bethel, Conn., assignor to The Trustees of Boston University, Boston, Mass.

Filed Feb. 2, 1978, Ser. No. 874,399
Int. Cl.[3] G01J 3/18, 3/42
U.S. Cl. 356—308 4 Claims



1. Apparatus for providing a controlled scan spectrophotometer comprising

a voltage waveform source,

a grating for providing a spectrally dispersed beam of light,

means for optically scanning said light spectrum in response to said voltage waveform,

means for selectively obtaining a predetermined narrow band of said spectrum in response to the voltage of said source, and

means for detecting the amplitude of the narrow band spectrum,

wherein said means for optically scanning the broadband spectrum comprises,

a galvanometer,

a mirror mounted on said galvanometer and reflecting the light spectrum provided by said grating,

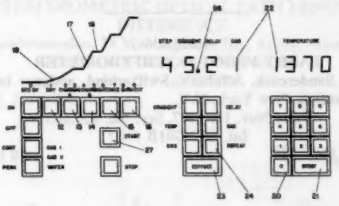
a focusing element located between said grating and said galvanometer mirror to provide a focused optical image of said grating on said mirror.

4,225,234

METHOD FOR SAMPLING IN FLAMELESS ATOMIC ABSORPTION SPECTROPHOTOMETRY

Paul Schmider, Munich, and Wolfgang Ruberg, Ascheim, both of Fed. Rep. of Germany, assignors to Beckman Instruments GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,490
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735467
Int. Cl.[3] G01J 3/30
U.S. Cl. 356—312 1 Claim



1. In a method of performing atomic absorption analysis in which a sample solution is introduced into a heating zone and heated to vaporize the same for analysis which includes the steps of (a) introducing an aliquot of said sample solution into said heating zone, and (b) thermally pretreating the sample solution introduced in step (a) by heating the same in the heating zone to remove volatile or decomposable substances therefrom, the improvement comprising the further steps in combination of:

(c) repeating steps (a) and (b) a preselected number of times for a preselected number of further aliquots of the same sample solution but prior to each repetition of step (a) cooling the heating zone as heated for the preceding step (b); and

(d) vaporizing sample remaining in the heating zone for analysis only after performing the repetitions recited in step (c) said preselected number of times.

4,225,235

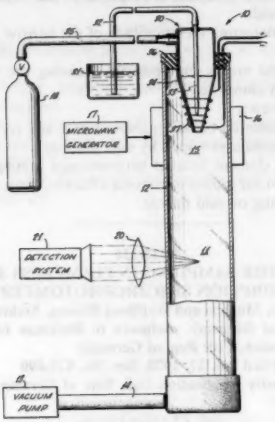
SAMPLE INTRODUCTION SYSTEM FOR FLAMELESS EMISSION SPECTROSCOPY

Robert J. Anderson, Villa Park, and Robert M. Studholme, Tustin, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jul. 10, 1978, Ser. No. 922,938
Int. Cl.[2] G01J 3/34
U.S. Cl. 356—316 21 Claims

1. In a system for analyzing the composition of a fluid sample wherein the sample components are excited through collision with an active metastable gaseous species, the excited sample components emitting a characteristic wavelength of light

which may be detected, said system including a microwave cavity through which said gaseous species flows and a microwave source coupled to said cavity, said source and said cavity exciting said gaseous species, a method comprising:



aspirating said sample directly into said microwave cavity to cause complete disassociation of said sample.

4,225,236

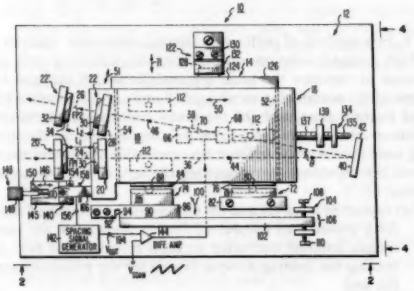
FABRY-PEROT INTERFEROMETER

John R. Sandercock, Affoltern, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Nov. 11, 1977, Ser. No. 850,663

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—346 **18 Claims**



1. A tandem Fabry-Perot interferometer comprising:

a first plane mirror Fabry-Perot interferometer whose mirror spacing can shift in value and which radiates an output light signal in response to an applied light input signal, the mirrors of said first interferometer being normal to said applied light signal, said output signal comprising a series of equally spaced pass bands of visible radiant energy in a given wavelength range, each pass band having a mean wavelength which is a function of the value of the spacing between the mirrors of said interferometer,

a second plane mirror Fabry-Perot interferometer whose mirror spacing can shift in value and which is responsive to said output signal applied as an input thereto, the mirrors of said second interferometer being normal to said applied output light signal, the mirror spacing of the second interferometer having a value sufficiently different from said first value so that the pass bands of the two interferometers at one wavelength coincide and the pass bands adjacent the one wavelength of one of the interferometers are displaced in wavelength sufficiently from the pass bands adjacent the one wavelength of the other interferometer so that substantially only the one wavelength is passed by the second interferometer; and

means for altering the value of said spacings by displacing one mirror with respect to the other mirror of each interferometer so that the ratio of the incremental change in said spacings is equal to the ratio of said spacings during said altering so that essentially one pass band is passed in said range by said second interferometer during said altering,

wherein the normal to the mirrors of said first and second interferometers intersect, said tandem interferometer including light directing means positioned at the intersection of said normals to receive the output signal of said first interferometer and to redirect the received output signal to the mirrors of said second interferometer.

4,225,237

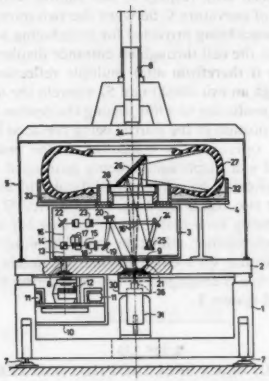
TIRE CHECKING APPARATUS

Hans Rottenkolber, Amerang near Rosenheim, Fed. Rep. of Germany, assignor to Opto Produkte, AG, Zürich, Switzerland

Filed May 11, 1978, Ser. No. 904,756

Int. Cl.³ G01B *9/021*

U.S. Cl. 356—348 **6 Claims**



1. An arrangement for laser interferometric tire checking comprising in combination: a laser beam emitter, means for processing an emitted laser beam including means for dividing an emitted laser beam into a reference beam and an object beam adapted to be diffusely reflected by an inner surface of a tire being checked,

a thermoplastic film as a light sensitive layer arranged to receive at least a reference beam, optical means arranged in the path of the object beam diffusely reflected by the inner surface of the tire being checked to thereby reduce the spreading angle of the pertaining beam cone impinging upon the light sensitive layer at an angle of less than 40°.

4,225,238

TIRE CHECKING DEVICE

Hans Rottenkolber, Amerang, Fed. Rep. of Germany, assignor to Opto Produkte AG, Zürich, Switzerland

Filed May 11, 1978, Ser. No. 904,757

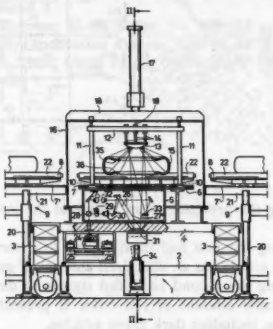
Claims priority, application Fed. Rep. of Germany, May 11, 1977, 2721215

Int. Cl.³ G01B *9/021*; G01M *17/02*

U.S. Cl. 356—348 **9 Claims**

1. A holographic checking device for observing both bead

zones as well as inner wall surfaces of tires of land and air vehicles free of any destruction thereof using the same optical arrangement with two different adjustments thereof which includes a coherent light source, a photo shutter, as well as an optical circuit dividing a beam emitted by the light source into an object beam and into a reference beam and which deflects these beams by an optic circuit, and which also includes a conical mirror coaxial with the tire to be checked and located in the path of said object beam coinciding therewith while a registering layer is located in the beam cone of the object beam reflected in a diffused manner by the tire surface to be checked through the intervention of said conical mirror, said device also including an observing system adapted to observe said registering layer, means for subjecting the tire to be checked to a pressure drop relative to the atmosphere surrounding the tire



to be checked, means for changing height position of the tire relative to said conical mirror including a removable holding device and a hood as well as a platform arranging said conical mirror on said removable holding device at a height differing from the height of the tire to be checked when the latter occupies its lying position while said holding device embraces the tire to be checked, said holding device for the conical mirror being movably connected to said hood which surrounds the last mentioned holding device and extends over the platform while forming an airtight closing member adapted to be evacuated and to be lifted and lowered, the tires to be checked being arranged on devices adapted to be placed upon the platform coaxially about the conical mirror for observing the inner side of the tire tread surface and being arranged coaxially below said conical mirror for observing both the bead zones and inner wall surfaces at differing heights.

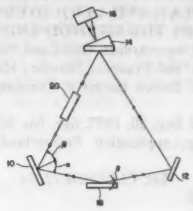
4,225,239

MAGNETO-OPTIC BIAS OF RING LASER USING REFLECTIVE MAGNETO-OPTIC ELEMENT AT NEAR-GRAZING INCIDENCE

Gary A. Prinz, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1979, Ser. No. 55,100
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **7 Claims**

1. In an improved ring laser including, in combination, means for radiating and reflecting clockwise and counterclockwise laser beams around said ring laser for biasing said beams, the improvement comprising:



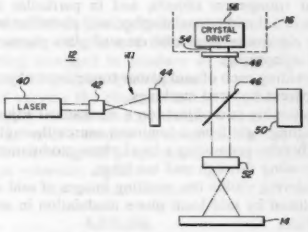
a magneto-optic mirror element placed between two corner, beam-reflecting surfaces so that the beams impinge on said element at near-grazing incidence.

4,225,240

METHOD AND SYSTEM FOR DETERMINING INTERFEROMETRIC OPTICAL PATH LENGTH DIFFERENCE

N. Balasubramanian, 19 Meetinghouse Rd., Acton, Mass. 01720

Filed Jun. 5, 1978, Ser. No. 912,212
Int. Cl.² G01B *9/02*
U.S. Cl. 356—360 **14 Claims**



13. A method of determining interferometric optical path length difference comprising:

varying the interferometric optical path length difference between a first and a second surface in three steps at one quarter wavelength intervals;

sensing the intensity of the interferogram radiation at at least one position of the interferogram at each of said steps;

storing the intensity sensed at each position at each step;

for each of said positions, adding the intensity at the first and third steps to produce the d.c spatial frequency amplitude, subtracting the intensity at the third step from that at the first to obtain the cosinusoidal spatial frequency amplitude and subtracting the intensity at the second step from the d.c. amplitude to produce the sinusoidal spatial frequency amplitude;

combining the sinusoidal and cosinusoidal amplitudes to produce a trigonometric function of the phase angle of the radiation reflected from each position of the first and second surfaces; and

generating from the trigonometric function of the phase angle an output representative of the optical path length difference at each position.

4,225,241

METHOD AND APPARATUS FOR ADJUSTING THE RELATIVE POSITIONING OF PLANAR TRANSPARENT OBJECTS, SUCH AS THE GLASS PLATES OF A LIQUID CRYSTAL DISPLAY, AND A LIQUID CRYSTAL DISPLAY ADJUSTED BY THE METHOD AND APPARATUS

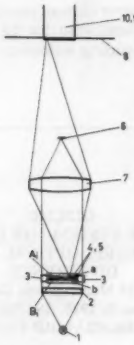
Rene Dändliker, Oberrohrdorf; Otto Lanz, Niederrohrdorf, both of Switzerland, and Francois Mottier, Hartford, Conn., assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Dec. 20, 1977, Ser. No. 862,604

Claims priority, application Switzerland, Dec. 23, 1976, 16243/76

Int. Cl.[2] **G01B** *11/14*

U.S. Cl. 356—400 **14 Claims**



1. In a method of adjusting the relative positioning of two planar transparent objects, and in particular the two glass plates of a liquid crystal display, said plates having transparent layer electrodes produced on said glass plates, the improvement comprising:

providing each of said planar transparent objects with transparent textured markings,

positioning said objects on a mechanical adjusting device,

emitting light from a luminous source through said objects, thereby generating a local phase modulation of said light passing through said markings,

rendering visible the resulting images of said markings produced by said local phase modulation in an optical dark field,

determining the positions of said objects by detecting said images of said markings in the image plane of said optical dark field by means of a camera tube,

said determining step including electronically scanning the field of said camera tube to produce scan signals and integrating the scan signals to detect said images, and

aligning said objects in accordance with said positions determined from said detected images.

4,225,242

FOUR COLOR TOMATO GRADER

Marvin M. Lane, Arlington, Va., assignor to Sortex North America, Inc., Sacramento, Calif.

Filed Feb. 8, 1978, Ser. No. 876,084

Int. Cl.[2] **G01J** *3/46;* **B07C** *5/342;* **G01J** *3/50*

U.S. Cl. 356—407 **1 Claim**

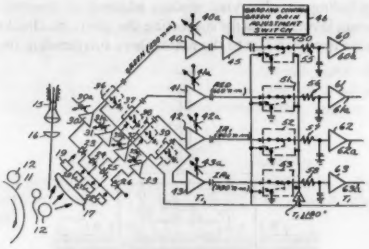
1. A method for sorting articles of a given produce according to a desired red color of that produce and for sorting undesired nonvegetable articles such as dirt clods and rocks from desired produce to be retained, comprising

passing through an inspection position the given articles of produce to be sorted along with mingled dirt clods and rocks,

illuminating the inspection position with light that includes a narrow band of visible green light substantially centered at approximately 530 nm, a narrow band of visible red light substantially centered at approximately 660 nm, and first and second narrow bands of invisible light respectively centered at approximately 800 nm and 990 nm,

receiving light reflected from articles passing through the inspection position,

producing first, second, third and fourth signals corresponding, respectively, to the amount of light that exceeds predetermined amounts of light in said 530, 660, 800 and 990 nm bands,



detecting the presence of an article at the inspection position,

comparing the first and third signals to determine if a detected article has an undesired amount of green color,

comparing the second and third signals to determine if an acceptable amount of red color is present in detected articles, including dark green articles,

comparing the third and fourth signals to determine if a detected object is vegetable or nonvegetable matter.

4,225,243

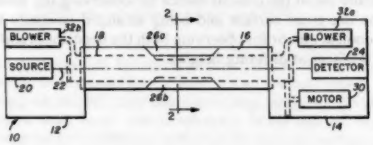
GAS MEASURING APPARATUS WITH STANDARDIZATION MEANS, AND METHOD THEREFOR

Pekka M. Typpo, Cupertino, Calif., assignor to Measurex Corporation, Cupertino, Calif.

Filed Jun. 26, 1978, Ser. No. 919,237

Int. Cl.[3] **G01N** *21/25, 21/00*

U.S. Cl. 356—409 **5 Claims**



1. A gas analyzer capable of measuring select properties of exhaust gas of combustion, said exhaust gas having a direction of flow in a stream and flowing through a stack, said analyzer with standardization means, comprising:

a source located to one side of said stack and capable of emitting a beam of radiation;

said beam aligned to pass substantially through said stream at a direction substantially perpendicular to the direction of flow of said stream;

a detector, aligned to receive said beam after passing substantially through said stream;

housing means for enclosing said beam, said means having at least two apertures permitting said gas to enter said means, to intercept said beam, and to exit from said means;

a member within said housing means and enclosing said beam;

said member having a plurality of apertures;

rotating means capable of aligning the apertures of said housing means and the apertures of said member such that a plurality of the apertures of said member are substantially aligned with at least two apertures of said housing means to permit said gas to enter said member, to intercept said beam, and to exit from said member;

said rotating means also capable of aligning the apertures of said housing means and the apertures of said member to prevent said gas from entering said member; and

means for purging said gas from said housing means.

4,225,244

DEVICE FOR INDICATING FIBRE LENGTH DISTRIBUTION OF A FIBRE SAMPLE

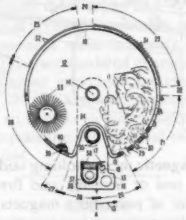
Eric Schwarz, Kilchberg, Switzerland, assignor to Matix AG, Zug, Switzerland

Filed Apr. 25, 1978, Ser. No. 899,883

Claims priority, application Austria, Apr. 28, 1977, 3013/77

Int. Cl.[2] G01N *21/00*; G01B *11/00*; G01N *21/84*; D01B *3/04*

U.S. Cl. 356—434 **8 Claims**



1. A measurement device for use with an apparatus for the automatic production and testing of a fibre sample arranged along a comb and consisting of a fibre material which is to be examined, in which apparatus the prepared fibre sample suspended in the comb runs through a testing array comprising a light beam for the slit-wise transverse illumination of the fibre sample and a light receiver for the determination, as an electric light value signal, of the quantity of light transmitted through the fibre sample and an indicator device for indicating the relative position of the sample and light beam in order to determine the fibre length distribution, the device comprising

a generator for generating electric pulses indicative of the relative position of the sample and beam, a first, second and third counter means associated therewith to provide respective signals indicative of particular relative positions of the sample and light beam,

the first counter means having associated with and being arranged to control storage means arranged to store a first, "100% light value" reference signal which is the difference between a zero value signal and the signal arising at an initial relative position of the sample and beam,

a first signal divider for forming a second reference signal representative of a predetermined fraction of the stored "100% light value" reference and a comparator for comparing the received light value signals with the second reference signal to generate a stop signal for the second counter means,

a second signal divider for forming a third reference signal representative of a further predetermined fraction, smaller than the first mentioned fraction, of the stored "100% light value" reference signal, a further comparator for comparing the light value signals received with the third reference signal to generate a stop signal for the third counter means,

and a device for indicating the counts stored in the second and third counter means when stopped.

4,225,245

APPARATUS FOR MEASURING THE OPTICAL TRANSMISSIVE POWER OF THE ATMOSPHERE

Michel Roiret, Massy; Aimé Salles, Courbevoie, and Michel Dupitier, Le Port Marly, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed May 26, 1978, Ser. No. 909,953

Claims priority, application France, May 31, 1977, 77 17173

Int. Cl.[2] G01N *21/22*

U.S. Cl. 356—437 **7 Claims**

1. An apparatus for measuring optical transmissive power of the atmosphere comprising:

(a) an electrically driven source for producing luminous flux;

(b) a current supply device arranged to supply an electric current to drive said source,

(c) a receiver station remote from said source and including first and second detectors for producing electrical signals indicative of luminous flux incident thereon from said source, said detectors having substantially the same operating characteristics, said first detector being arranged to receive luminous flux from said source through the atmosphere;

(d) a fibre optic light guide arranged to supply light directly from said source to said second detector;

(e) means for establishing a substantially constant reference signal;

(f) a comparator for comparing the signal produced by said second detector with the said reference signal, the comparator being arranged to produce an output signal in accordance with said comparison; and

(g) means for varying the electric current supplied by said current supply device in accordance with said output signal and in such a manner as to cancel the difference between electrical signals produced by said second detector and said reference signal.

4,225,246

MIXING DEVICE

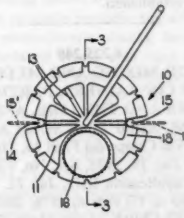
Iain N. Bridge, Beckbury, Nr. Shifnal, England, assignor to Bridge Storar Ltd., Wolverhampton, England

Continuation-in-part of Ser. No. 835,320, Sep. 21, 1977, abandoned. This application Aug. 8, 1978, Ser. No. 931,977

Claims priority, application United Kingdom, Sep. 14, 1977, 38255/77

Int. Cl.[2] B28C *5/20*

U.S. Cl. 366—40 **9 Claims**



1. A mixing device comprising a hollow drum formed by a

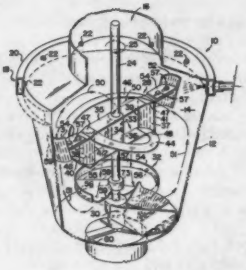
shell of substantially constant thickness and defining generally a body of revolution about a first axis, a handle pivotally connected to said drum so that said drum is rollable along a supporting surface and rotatable relative to said handle, means defining an opening in said drum by means of which the interior of said drum can be filled with and emptied of a material to be mixed therein, and internal axially extending vanes in said drum for agitating said material when said drum is rolled along said supporting surface, each said internal vane being defined by a corresponding groove which extends inwardly from the external surface of said drum, each groove having detachably positioned therein a comb of spikes which project outwardly of said drum away from said first axis.

4,225,247

MIXING AND AGITATING DEVICE

Harry Hodson, Sarasota, Fla.

Filed Mar. 9, 1979, Ser. No. 19,154
Int. Cl.³ B28C 5/16
U.S. Cl. 366—40 **10 Claims**



1. A mixing assembly of the type primarily designed to accomplish a predetermined degree of hydration of solid particles, said assembly comprising: casing means defining container means on the interior thereof and including inlet means configured to receive both solid particles and liquid therethrough and thereby including liquid inlet means and solid inlet means structured independent of one another, said liquid inlet means comprising a spray assembly disposed and structured to direct liquid in spray form into contact with the incoming solid material at various spaced apart points along the periphery of said container; agitating means comprising a plurality of agitating assemblies movably mounted on the interior of said casing means and disposed along a predetermined portion of the length of said container means in at least partially spaced apart relation from one another, outlet means disposed down stream of said inlet means relative to said agitating means, said agitating means disposed, configured and structured to provide a flow of the mixed material concurrently in a direction around the central axis of said container and in a direction along a predetermined portion of the length of said container between opposite ends of said container, whereby shear flow of the mixed material is established.

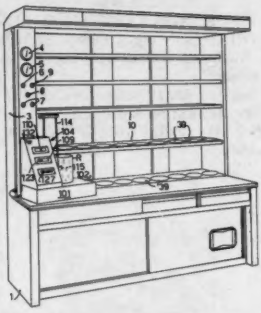
4,225,248

DEVICE FOR MIXING AND METERING THE CONTENTS OF CONTAINERS, PARTICULARLY FOR PAINTS, DYES AND THE LIKE, AND SHELF OR SHELVING ADOPTING SUCH A DEVICE

Serenella F. Para, Via Campo dei Fiori 14, 21020 Luvinate, Italy

Filed Jul. 19, 1978, Ser. No. 926,019
Claims priority, application Italy, Jul. 21, 1977, 25968 A/77; Jul. 28, 1977, 26243 A/77; Feb. 6, 1978, 20023 A/78
Int. Cl.³ B01F 13/08, 15/04, 7/16
U.S. Cl. 366—251 **14 Claims**

2. A stirring device for mixing the contents of containers or vessels, particularly for paints, dyes and the like, comprising at least one first magnetic means; a fixed seat or housing enclosing said first magnetic means; means for rotatably driving said first magnetic means; and a second magnetic means comprising magnetic cooperating means cooperating with said first magnetic means, a stirring shaft for supporting said magnetic cooperating means, and means for rotatably supporting said stirring shaft in a cover of the container or vessel positioned on said fixed seat or housing so that said magnetic cooperating means is spaced from said first magnetic means whereby rotation of said first magnetic means is transferred to the second magnetic means, magnetic attraction between said first magnetic means



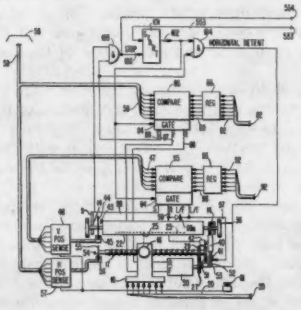
and said second magnetic means holding said container pressed against said fixed seat or housing, said first magnetic means comprising a spider of permanent magnets of opposite sign, that is positive and negative, in an alternate arrangement, said first magnetic means being supported at the bottom by a support, and said magnetic cooperating means of said second magnetic means comprising a similar spider of positive and negative alternating permanent magnets, so that, in operation, the magnets of the first magnetic means and the magnets of the magnetic cooperating means of opposite sign are facing one another and directly superimposed with a substantial mutual attraction.

4,225,249

VARIABLE CHARACTER SPACING MATRIX FOR PROPORTIONAL SPACING PRINTING SYSTEMS

Howard G. Kettler; Robert A. Kolpek, both of Lexington, Ky., and Walter S. Rosenbaum, Bethesda, Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1977, Ser. No. 810,329
Int. Cl.² B41J 19/58
U.S. Cl. 400—3 **10 Claims**



1. Apparatus for printing justified text comprising:
memory means containing predefined ideal escapement

values and escapement variance values for intercharacter spacing based on the contours of the characters and the aesthetic appearance of character combinations,

a character source,

means for accumulating a plurality of characters and spaces from said character source to form a printing line,

means for accumulating an ideal escapement value total and escapement variance value totals from said memory means for said accumulated characters and spaces of said printing line,

means for defining the total escapement value in the printing line,

means for comparing said accumulated ideal escapement value total and said escapement variance value totals with said total escapement value for the printing line,

means for terminating said printing line when said accumulated ideal escapement value total and one of said escapement variance value totals bracket said defined total escapement value,

means for determining a deviation escapement value based on said accumulated ideal escapement value total, said defined total escapement value, and said one of said escapement variance value totals; and

a variable spacing printing mechanism responsive to said deviation escapement value to modify the intercharacter escapement of the accumulated characters in accordance with predetermined intercharacter escapement variance values based on the aesthetic appearance of character combinations so that the actual escapement value of said printing line equals the defined total escapement value of said printing line.

4,225,250

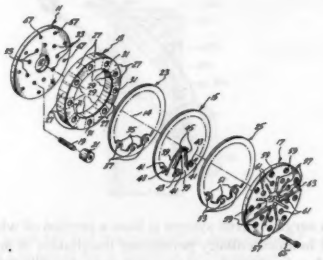
SEGMENTED-RING MAGNET PRINT HEAD

Richard E. Wagner, Bellevue; Verivada Chandrasekaran, Kirkland, and Edward D. Bringhurst, Seattle, all of Wash., assignors to Tally Corporation, Kent, Wash.

Filed Oct. 10, 1978, Ser. No. 949,876

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **24 Claims**



1. A print head for a serial dot matrix printer comprising:

a base plate;

a ring magnet formed of a permanently magnetized material, said ring magnet being axially magnetized and mounted on one face of said base plate;

a plurality of electromagnetic elements mounted on the same face of said base plate as said ring magnet so as to be surrounded by said ring magnet;

a plurality of hammers, equal in number to the number of electromagnetic elements, mounted on said ring magnet, said plurality of hammers being planar and formed of a resilient, magnetically permeable material, said plurality of hammers being mounted such that a hammer overlies each electromagnetic element and forms a magnetic flux path between said ring magnet and its associated electromagnetic element, said hammers being positioned such that each hammer is drawn from an unstressed planar state into a stressed cocked state by said ring magnet pulling hammers toward their associated electromagnetic elements, said pulling action occurring in the absence of the application of electric power to said electromagnetic elements; and,

a plurality of dot printing elements equal in number to said number of hammers, one of said dot printing elements mounted on each of said hammers.

4,225,251

ELECTRO-MECHANICAL PRINTING APPARATUS

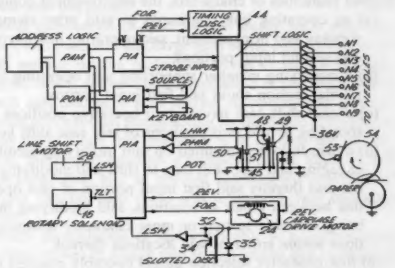
Norbert M. Klimek, Cockfosters, and Manfred A. Huber, New Barnet, both of England, assignors to The Rank Organisation Limited, London, England

Filed Jan. 9, 1979, Ser. No. 2,213

Claims priority, application United Kingdom, Jan. 9, 1978, 638/78

Int. Cl.³ B41J *3/05*

U.S. Cl. 400—124 **2 Claims**



1. An electro-mechanical printing apparatus including in combination

a platen,

means for advancing electro-sensitive paper over the platen,

a print head cooperating with the platen, the print head having a number of selectively energizable needles arranged in a row in the print head,

an electric motor,

drive transmission means coupling the electric motor to the print head to effect translational movement of the latter parallel to the platen in a direction transverse the row of needles,

a timing disc coupled to the drive transmission to be rotated thereby, the disc being subdivided into equi-angular sectors with adjacent sectors being of different light-transmitting or reflecting characteristics,

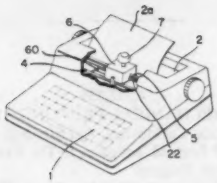
photoelectric sensing means arranged to cooperate with the timing disc to produce periodic signals upon rotation of the disc, the photoelectric sensing means including two photocells displaced relative to each other around the timing disc so that the signals produced by the two photocells upon rotation of the disc are in phase quadrature relative to each other, and

clock pulse generating means responsive to the periodic signals produced by the two photocells to provide a clock pulse each time a sector boundary passes either photocell, said clock pulses being utilized to control print needle energization and having a phase of generation relative to said periodic signals dependent on the direction of timing disc rotation and therefore on the direction of print head movement.

4,225,252
CHARACTER SELECTION FOR SINGLE ELEMENT PRINTER

Tetsuma Asahi, Kodaira, Japan, assignor to Silver Seiko Co., Ltd., Kodaira, Japan

Filed Mar. 23, 1978, Ser. No. 889,406
Claims priority, application Japan, Mar. 25, 1977, 52-32152
Int. Cl.[2] B41J *23/02*
U.S. Cl. 400—161.5 23 Claims



1. In a selection mechanism for a single element printer including a single print element having first and second pluralities of characters carried thereby and a case shift key having two positions corresponding respectively to said first and second pluralities of characters, the improvement comprising:

(a) an operating link connected to said print element for rotating said print element, said operating link having first and second input portions;

(b) a modifying member supporting said operating link for pivotal motion about said first input portion;

(c) a case shift cam having two operative positions corresponding to said two positions of said case shift key;

(d) a cam follower mounted on said modifying member for engaging said case shift cam to shift said modifying member and thereby said first input portion of said operating link between a pair of locations, said modifying member being movable to two or more character selection positions within either of said locations thereof;

(e) first character selection means operably coupled to said modifying member in either of said locations for positioning said first input portion of said operating link to any of said character selection positions; and

(f) second character selection means operably coupled to said second input portion of said operating link for positioning said operating link to any of a predetermined plurality of pivotal positions relative to said first input portion thereof.

4,225,253
COMPRESSIBLE LIQUID CONTAINER AND APPLICATOR

Alton L. Fraleigh, 312 Rosalee, Rte. 3, Box B, Fort Myers, Fla. 33908

Filed May 30, 1978, Ser. No. 910,233
Int. Cl.[3] B05C *1/06, 9/04*
U.S. Cl. 401—9 1 Claim

1. A liquid container and applicator to apply paint in the container to the exposed head of a screw and the outer surface of an annular flange surrounding the head when the screw is fixed in place, while protecting the areas surrounding the flange from the paint comprising,

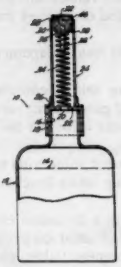
a plastic squeeze bottle having an externally screw threaded neck portion,

an internally threaded cap for engagement on said neck portion and providing a central hole in a top wall thereof, defining a top peripheral flange,

a round dispenser tube, and means to fix said tube to an outer portion of said peripheral flange in an upwardly extending relation thereto, said tube having an open mouth portion square cut perpendicularly to the axial length of the tube and with an inner diameter to just receive the flange surrounding the screw head,

an absorbent sponge sized and shaped to fit in said open mouth portion,

a compression spring, disposed in said dispenser tube between an inner portion of said peripheral flange and said sponge, said compression spring being proportioned in an



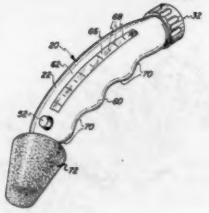
unstressed relation to position a predetermined length of said sponge outwardly of said open mouth, and

wherein one of the terminal ends of said compression spring, formed as a prong extends into said sponge to induce rotational motion of said sponge upon compression of said spring during application of paint to a screw and flange.

4,225,254
SURGICAL SCRUB SYSTEM

Steven E. Holberg, 411 NW. 88 Ave., Pembroke Pines, Fla. 33024, and Ronald J. Sollitto, 222 Christie St., Ridgefield Park, N.J. 07660

Filed Mar. 17, 1977, Ser. No. 778,671
Int. Cl.[2] A46B *11/00;* A61M *35/00*
U.S. Cl. 401—119 18 Claims



1. A surgical scrub system at least a portion of which is to be placed in an essentially permanent installation in an operating room for dispensing any selected one of a plurality of sterile liquids and applying the selected liquid to an area of the body of a patient while maintaining the sterile condition desired at said area, said scrub system comprising:

a plurality of supply reservoirs associated with said essentially permanent installation, one supply reservoir for each sterile liquid to be dispensed;

a dispensing head associated with said essentially permanent installation;

selector means associated with said essentially permanent installation and communicating with each supply reservoir and with the dispensing head for selectively opening communication between the dispensing head and any one of the supply reservoirs;

an operator coupled with the selector means and capable of manual actuation to any one of a plurality of selected positions, each position corresponding to the communication of the dispensing head with one of the supply reser-

voirs, for manually selecting which of the supply reservoirs will communicate with the dispensing head;

a hollow handle constructed of a sterilizable material, such as stainless steel, the handle extending longitudinally between first and second ends and including a chamber therein;

a dispensing tip constructed of a sterilizable material and located at the first end of the handle, the tip having an external surface, an internal cavity and passages between the cavity and the external surface;

a valve constructed of sterilizable material and located in the handle for selectively opening and closing communication between the cavity and the chamber;

an opening located at the second end of the handle and communicating with the chamber;

a coupling member constructed of a sterilizable material, such as stainless steel, and removably securable to the dispensing head which, as a result of said association with the permanent installation, ordinarily is not sterile, said coupling member having an external configuration complementary to the opening in the handle such that the handle is capable of being coupled asceptically with the non-sterile dispensing head via the coupling member for placing the selected liquid in the chamber of the handle while maintaining the handle sterile; and

a porous swab;

the external surface of the dispensing tip including means for coupling the porous swab thereto for selective attachment and detachment such that a liquid in the chamber will be passed to the swab through the valve, the cavity and the passages for application to said area.

4,225,255

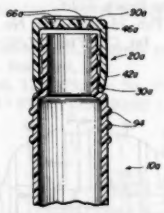
LIQUID FLOW CONTROLLING DISPENSING PLUG FOR WIPE-ON APPLICATOR

Morris Braun, Chicago, Ill., and George B. Spransy, Oconomowoc, Wis., assignors to W. Braun Co., Chicago, Ill.

Filed Feb. 23, 1979, Ser. No. 7,494

Int. Cl.³ A47L *1/08*

U.S. Cl. 401—137 **6 Claims**



1. In an assembly for the controlled dispensing of a liquid, including a container for a liquid to be dispensed,

said container having an outlet end,

a fluid-flow-control applicator,

attachment means for securing said applicator to said container at said outlet end thereof,

said applicator including a top wall spanning said outlet end of said container,

said top wall being formed with a plurality of openings extending transversely therethrough,

said openings constituting liquid-permeable ducts each having a fluid inlet port in communication with the interior of said container and a fluid discharge port in communication with ambient atmosphere to establish fluid communication between the interior of said container and ambient atmosphere,

said ducts having a transverse cross-sectional area which is inconstant along the fluid-flow length thereof, a cross-sectional area of each of said ducts at said ducts as determined at an axial position of each of said ducts which is intermediate the area of the opposed inlet and discharge ends thereof,

each of said ducts having bounding slanted walls which define in vertical cross section an angle in the range of from about 45° to about 120°,

said ducts in said applicator being characterized in that they inhibit significant flow of liquid from said container through said top wall of said applicator and control discharge of fluid from each said discharge port to prevent flow from said container under gravitational forces alone, and in that they allow flow of liquid from said container through said top wall of said applicator and discharge of liquid from each said discharge port only upon inversion of said container and presentation of said applicator to a surface to which the liquid is to be applied,

spacer means carried by said top wall of said applicator,

said spacer means comprising a collar surmounting and circumscribing a liquid-dispensing end of said ducts and extending in a plane generally normal to a through passage of said ducts to establish a finite controlled spacing between discharge ports of said ducts and a plane of an upper edge of said collar defining a contact ring thereof,

each said discharge port being recessed with respect to a liquid-application surface to which said ring of said applicator is contacted during functional dispensing of liquid from said container,

physical dimensions of each of said ducts, each said inlet port, and each said discharge port being effective to establish surface tension molecular forces including capillary forces which act on a liquid contained in said ducts and at each said discharge port thereof to oppose and to overcome gravitational forces acting on the liquid contained in said ducts when said container is in an inverted disposition, thereby to establish a meniscus of the liquid at said discharge port and to prevent unrestricted free flow of liquid through said ducts and from each said discharge port;

whereby presentation of said applicator to a surface to be wetted serves to bridge said spacer means and to establish contact between said surface and the meniscus of the liquid at each said discharge port of said ducts, thereby to overcome said surface tension molecular forces including said capillary forces, to allow flow of liquid through each said discharge port to wet said surface.

4,225,256

PEN NIB WITH SLIT FOR LIQUID INKS

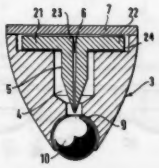
Jürgen Rösler, Hamburg-Blankenese, and Günther Herrnring, Alvesloe, both of Fed. Rep. of Germany, assignors to Montblanc-Simplo GmbH, Hamburg, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 885,495

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1977, 2710919

Int. Cl.³ B43K *7/00*

U.S. Cl. 401—209 **5 Claims**



1. A pen nib for liquid inks which comprises:

a slit extending in the longitudinal direction of said nib to the front and thereof, said slit dividing the front end of said nib into two limbs;

a ball-point bed, and

a ball-point tip carrying said ball-point bed and arranged on the underside of said nib in the vicinity of and in fluid communication with said slit, said ball-point tip being adapted to form an angle of about 90° with a writing plane when said pen nib is in its writing position, and being provided with a bore;

a pin-shaped member engaging said bore with radial play, said pin-shaped member having a centrally arranged slit locatable in the same plane with and extending in the longitudinal direction of said slit in said nib to provide two sections joined to and forming with said two limbs a structure of T-shaped cross section; and

a ball rotatably arranged in said bed.

4,225,257

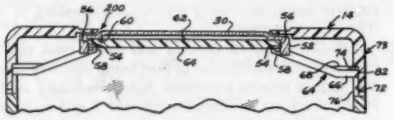
CONDUCTOR ARRANGEMENT AND ASSEMBLY METHOD

Joseph R. Andreaggi, Short Hills, N.J., assignor to Sangamo Weston, Inc., Newark, N.J.

Division of Ser. No. 675,931, Apr. 12, 1976, abandoned. This application Oct. 6, 1977, Ser. No. 840,094

Int. Cl.[2] F16B *1/00*

U.S. Cl. 403—24 **8 Claims**



1. A shock resisting mounting arrangement for mounting an object in a casing comprising, an object having a body to be mounted in a casing, first and second stiff unitary arms extending from the body, each arm having a plurality of fingers including at least two resilient fingers in a common plane, and at least a third resilient finger between said at least two fingers and in a plane spaced from the plane of said at least two fingers, said plurality of fingers each being of substantial length to enhance its resiliency, and cooperating clamp means on the casing for receiving the fingers of the respective arms therebetween, said clamp means including means for restraining said arms against movement in the plane of said at least two fingers, and means for clamping against said fingers to urge the plurality of fingers toward a common plane so that the body is resiliently mounted between the fingers of the respective arms.

4,225,258

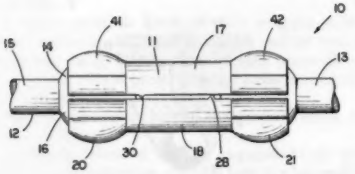
PIVOT MECHANISM AND METHOD OF MANUFACTURING SAME

William E. Thompson, R.R. 1, Box 89, Middletown, Ind. 47356

Filed Apr. 13, 1979, Ser. No. 29,773

Int. Cl.[3] F16C *11/06*

U.S. Cl. 403—56 **9 Claims**



1. A pivot mechanism comprising:

a first element including a rounded portion with a bearing surface and an arm extending outwardly from said rounded portion;

a frame including a pair of members with mutually opposed and spaced apart outer ends cooperatively forming a socket in which said rounded portion is located providing a joint between said element and frame, said pair of members being integrally attached together in a first location remote from said ends and extending in a cantilevered fashion from said first location to said ends spring-biasing said ends against said bearing surface;

a second element including a second rounded portion with a second bearing surface and a second arm extending outwardly from said second rounded portion;

said members including second mutually opposed and spaced apart outer ends which cooperatively form a second socket in which said second rounded portion is located providing a second joint between said second element and said frame, said members being integrally attached together at a place remote from said second ends and extending in cantilevered fashion from said place to said second ends spring-biasing said second ends against said second bearing surface;

said members being integrally attached together at said first location which is spaced apart from said place, said frame having a tubular main body with a longitudinal axis and opposite socket ends, said rounded portion of both said first element and said second element being spherical in configuration bearingly received by said socket ends, said tubular main body being composed of said pair of members, each of semicircular cross section, said members including aligned opposite edges which extend along said axis, said tubular main body including a plurality of teats integrally joining opposite edges of said members together both at said first location and at said place.

4,225,259

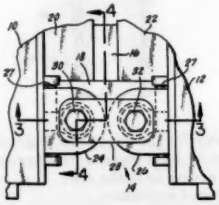
PALLET COUPLER

Floyd G. Baldwin, Garden Grove, and Kenneth D. McIntire, Norwalk, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 15, 1979, Ser. No. 12,377

Int. Cl.[3] F16C *11/00*

U.S. Cl. 403—62 **7 Claims**



1. A coupler for interconnecting pallets by their attach rings comprising:

a spacer with parallel sides to contact the flanges of said pallets, the sides of said spacer providing a pivotal surface for said flanges and lateral stability between the interconnected pallets;

a base attached to and offset from said spacer to receive said attach rings;

a plate to overlie said attach rings;

connecting means to attach said plate to said base and capture said attach rings;

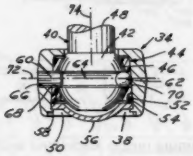
elastomeric means located between said connecting means and said attach rings providing flexibility between joined pallets.

4,225,260

TIE ROD BALL JOINT CONSTRUCTION

Donald R. Gaines, Farmington, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Mar. 2, 1979, Ser. No. 16,916
Int. Cl.[2] F16C 11/06
U.S. Cl. 403—114 2 Claims



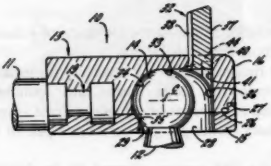
1. A joint comprising a socket member having a cavity therein opening to the exterior thereof, a stud member having a ball portion received in said cavity and a stud projecting generally axially therefrom to the exterior of said socket member, said ball having a generally spherical bearing surface and an essentially continuous groove in the equatorial area of said generally spherical bearing surface, a bearing seat ring received in said cavity and having a generally spherical surface complimentary to and bearing on at least a portion of said generally spherical surface of said ball, a pin carried by said socket member and projecting into said groove, a ball projecting into said groove and said bearing seat, and said pin, last mentioned ball, and groove being constructed and arranged to essentially prevent pivoting of said members relative to each other in one plane containing the longitudinal axis of said stud member while permitting pivoting of said members relative to each other in a plane at a right angle to said one plane and containing said longitudinal axis of said stud member and permitting said stud member to rotate on its longitudinal axis relative to said socket member.

4,225,261

BALL SOCKET ASSEMBLY WITH RESILIENT LOCKING KEY

Thomas O. Marx, Rockton, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Feb. 12, 1979, Ser. No. 11,759
Int. Cl.[3] F16C 11/00; F16D 1/12
U.S. Cl. 403—122 5 Claims



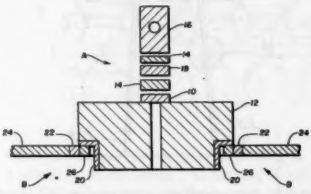
1. A ball socket assembly providing a swivel connection between first and second parts, said assembly comprising a socket member rigidly connected to said first part and a ball of predetermined radius rigidly connected to said second part, said socket member having an elongated slot opening outwardly on one side of the socket member and formed with a bottom wall generally semi-circular in cross section, the cross section of said bottom wall having a radius substantially the same as the radius of said ball, said slot being longer than said radius and having a first end portion receiving said ball and a second end portion communicating with said first end portion, a flange formed on said socket member at the opening of said slot and extending along said first end portion thereof to captivate said ball whereby the opening of said slot has generally the shape of a keyhole with the wide part of the opening at said second end portion and the narrow part of the opening at said first end portion, a clip mounted in said socket member in said second end portion of said slot and slidable in said socket member transversely of said slot between an inactive position and an active position, said clip when in said active position engaging and confining said ball to hold the ball in the first end portion of said slot and captivated by said flange, and a resilient lip formed on said clip to flex and pass said ball as said clip is moved from said inactive position to said active position and operable in said active position to overlap the ball and engage the latter whereby engagement of the lip and the ball holds the clip against sliding in said socket member and the clip holds the ball in said first end portion of the slot.

4,225,262

NIOBIUM COATINGS FOR JOINING CERAMIC TO METAL

Nicholas S. Koop, St. Paul, and William J. Morrissey, Champlin, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 11, 1979, Ser. No. 2,618
Int. Cl.[2] B23K 1/04
U.S. Cl. 403—272 13 Claims



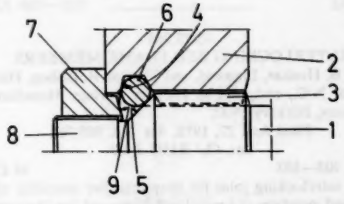
1. An article including a ceramic-metal joint, the article comprising a ceramic component and a metal component defining a joint area therebetween, the ceramic component including a coating of niobium thereon in the joint area, and a braze material in the joint area joining the components together by virtue of its being fused to the niobium coating and to the metal component.

4,225,263

LOCKING DEVICE

Sture L. Asberg, Partille, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Feb. 15, 1978, Ser. No. 878,156
Claims priority, application Sweden, Mar. 31, 1977, 7703727
Int. Cl.[2] F16D 1/06
U.S. Cl. 403—326 7 Claims



1. A device for locking male and female elements (1,2) against axial displacement relative to one another, said male element engageable in a bore of said female element and having a first section and a second section (8) of reduced cross-section connected by a first annular surface (5), means defining an annular groove (4) in the bore of said female element, an elasti-

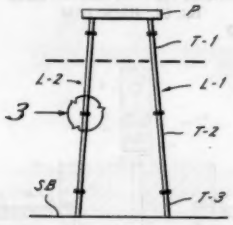
cally deformable locking ring (6) mounted on the second section, a displaceable member moveable relative to the first section of said male element having a second surface (9) confronting said first surface and engageable with said locking ring, at least one of the first and second surfaces being tapered, said surfaces upon movement toward one another affecting radial outward displacement of said locking ring to engage in said annular groove, the annular space between the bore of said female element and the reduced second section of said male element being of greater cross-section than the cross-section of said locking ring so that the O-ring and male element may be moved in either direction in the bore of said female element when the O-ring is seated on said second section.

4,225,264

METHOD AND APPARATUS FOR COUPLING ENGAGEMENT OF MISALIGNABLE FLANGES

Malcolm G. Coone, Houston, Tex., assignor to Lynos, Inc., Houston, Tex.

Filed Sep. 18, 1978, Ser. No. 943,597
Int. Cl.[3] F16D *1/00*; F16L *23/00*
U.S. Cl. 403—337 **8 Claims**



1. Apparatus for coupling engagement of misalignable flanges disposed around the exterior of tubular ends, each of said flanges having at least one passage therethrough and a taper defining said passage for locating plug means on said taper and for preventing complete passage of said plug means through said passages, said apparatus comprising: plug means for companion receipt within each of said tapers, the relative configuration between each of the tapers and each of the said plug means preventing said plug means from freely passing through the said respective passage, said plug means having a bore disposed therethrough, the center line of said bore being eccentrically defined away from the planar axis of said plug means; means companionly and selectively receivable through the bore of said plug means for securement with said plug means and for engaging said flanges; and elastomeric seal means for preventing fluid communication across and between the flanges of said tubular ends, said seal means being housed within one of said flanges and having an encircling band member for prevention of extrusion of said ring within said housing.

4,225,265

INTERLOCKING BED FRAME MEMBERS

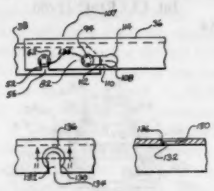
Richard B. Hooker, Linwood, and Thomas R. Bishop, Hickory, both of N.C., assignors to Hickory Springs Manufacturing Company, Hickory, N.C.

Filed Apr. 27, 1978, Ser. No. 900,763
Int. Cl.[2] B25G *3/00*
U.S. Cl. 403—353 **14 Claims**

1. An interlocking joint for snap-together assembly of first and second members of a metal bed frame and the like comprising:

(a) a first projection on said first frame member having a body adjacent said first member;

(b) a first projection receiving slot formed in said second frame member, said first slot having an entry portion for entry of said first projection into said slot, a communicating portion extending from said entry portion, and a projection retaining portion spaced away from said entry portion, said projection retaining portion being larger than said communicating portion, and connected to said entry portion by said communicating portion; and



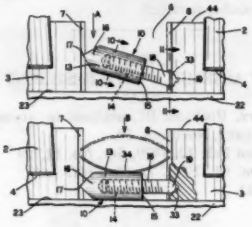
(c) resilient retaining means associated with said first projection for engaging the periphery of said retaining portion for releasably retaining said first projection in said enlarged retaining portion of said first slot.

4,225,266

METHOD AND APPARATUS FOR ADJUSTING THE ELEVATION OF MANHOLE COVERS

Raymond L. Fier, 5323 Pin Oak Ave. NW., Massillon, Ohio 44646

Filed Nov. 1, 1978, Ser. No. 956,623
Int. Cl.[2] E02D *29/14*; E01C *23/00*
U.S. Cl. 404—26 **15 Claims**



13. Apparatus for adjusting the elevation of a manhole cover within a manhole frame including:

(a) circular ring means having inwardly projecting manhole cover supporting ledge means and upstanding flange means, said ring means being split at least at one point on its periphery forming a gap between a pair of spaced end portions;

(b) adjustable link means adapted to be forcibly placed within the gap and extend between the spaced end portions of the ring means to expand the ring means outwardly to force the ring means into abutting engagement with the manhole frame;

(c) the link means including a sleeve having inner and outer ends with an internally threaded axially extending opening communicating with the inner end, and a bolt threadably engaged in said opening and extending axially therefrom;

(d) the outer end of the sleeve and the bolt each engaging a respective spaced end of the ring means; and

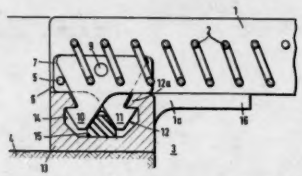
(e) spring-biased keeper means operatively engaged with the spaced end portions of the ring means and link means to assist in maintaining said link means between said spaced end portions.

4,225,267

HIGHWAY EXPANSION JOINT ASSEMBLY

Reinhold Huber, Rorbas, Switzerland, and Waldemar Köster, Forsbach, Fed. Rep. of Germany, assignors to Kober AG, Switzerland

Filed Mar. 29, 1979, Ser. No. 25,270
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842228
Int. Cl.[3] E01C *11/04*
U.S. Cl. 404—69 21 Claims



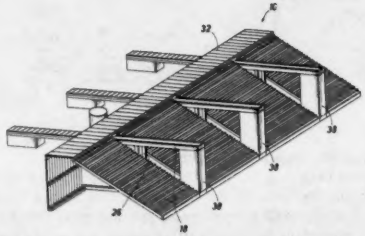
1. An expansion joint assembly for covering gaps between adjacent sections of vehicular road beds, bridges and the like comprising an elongated elastomeric strip having a plurality of retaining members embedded at least in part in and bonded securely to the elastomeric strip along the longitudinal edges thereof, said retaining members having engaging means extending from said strip and being arranged so that the engaging means of at least one of said retaining members face in one direction and the engaging means of at least one of the other retaining member faces in another direction so as to cooperatively move under deformation of said strip to detachably engage with a receiving element located in said road bed.

4,225,268

BREAKWATER PIER APPARATUS

Johannes J. Treu, 1110 Camino Village Dr. #2624, Houston, Tex. 77058

Filed Jun. 18, 1979, Ser. No. 49,490
Int. Cl.[3] B63B *35/00;* E02B *3/06*
U.S. Cl. 405—27 10 Claims



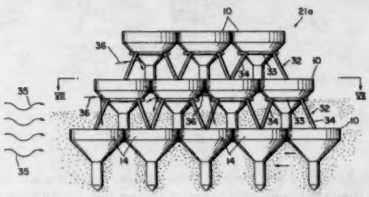
1. A breakwater which comprises:
(a) a framework deployable in a body of water;
(b) buoyant means supported by said framework, said buoyant means imparting a selected flotation to said framework;
(c) wave energy absorbing means comprising a surface facing the impinging waves arriving at the breakwater and which
(1) is a sloping surface;
(2) is formed of a facing member having openings therein;
(3) is supported by said framework partly above the surface of the water; and
(4) has a length corresponding to the length of the breakwater;
(d) said buoyant means and framework supporting said wave energy absorbing means floating in the water to rise and fall with the tide within a specified range; and
(e) a solid wall supported by said framework and which
(1) is spaced behind said wave energy absorbing means;
(2) has a height approximately equal to the height of said wave energy absorbing means; and
(3) is approximately coextensive to said wave energy absorbing means.

4,225,269

FUNNEL-SHAPED STRUCTURAL BLOCK AND ASSEMBLIES OF SUCH BLOCKS FOR SHORE PROTECTION

Atsushi Matsui, 12, Baban-Cho, Shizuoka-Shi, Shizuoka-Ken, Japan

Filed Feb. 7, 1979, Ser. No. 10,157
Claims priority, application Japan, Feb. 15, 1978, 53-16148; May 30, 1978, 53-64708
Int. Cl.[2] E02B *3/06;* E02D *5/10, 5/48*
U.S. Cl. 405—33 13 Claims



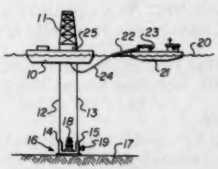
1. A shore-protective structure comprising a horizontal layer of a plurality of elementary structural blocks placed in mutually adjoining disposition on the surface of a seabed, each structural block having a body substantially in the shape of a right circular cone and a leg extending coaxially from the vertex of the body, said body having an inverted conical surface facing downward and being in contact with the seabed lying therebelow, so that the load of each block is transmitted to the material through the conical surface and evenly distributed in the directions normal to the surface so as to be borne by the seabed, the structural blocks having at least their legs buried downward into the seabed.

4,225,270

METHOD AND APPARATUS FOR CONNECTING A FLOWLINE TO AN OFFSHORE INSTALLATION

Donald W. Dareing, Houston, Tex., assignor to Maurer Engineering Inc., Houston, Tex.

Filed May 22, 1978, Ser. No. 908,580
Int. Cl.[2] F16L *1/00;* B63B *35/04;* E21B *43/01*
U.S. Cl. 405—168 14 Claims



1. A method of connecting an underwater flowline in a body of water having a substantial current to an underwater connection point having an alignment funnel wherein the flowline is fed from a floating position and drawn by a cable into said alignment funnel, said method comprising bowing the leading flowline, prior to introduction into said alignment funnel, in a

long shallow curvature in a lateral non-vertical direction by a predetermined amount such that the end of the leading flowline may enter said alignment funnel without any lateral or angular displacement relative to the longitudinal axis thereof.

4,225,271

HYDRAULICALLY OPERATED MINE ROOF SUPPORT AND A CONTROL ARRANGEMENT THEREOF

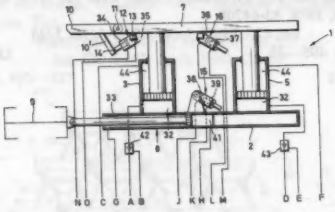
Ernst-Günter Nerlich, Essen, Fed. Rep. of Germany, assignor to Bochmer Eisennuette Heintzmann GmbH, Bochum, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,692

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807431

Int. Cl.³ E21D *23/16*

U.S. Cl. 405—302 **11 Claims**



11. A mine roof support installation including a hydraulically operated mine roof support having first consumers which require a small amount of a working medium per time unit and second consumers which require a large amount of the working medium per time unit; a neighboring mine roof support located adjacent to said first-mentioned mine roof support; first control means for said first consumers which require a small amount of a working medium per unit time, said first control means including a first bundle of hoses having a relatively small inner diameter for passing the working medium and arranged to select and to apply pressure to the first consumers directly from said neighboring mine roof support; and second control means for all second consumers which require a large amount of the working medium per unit time, said second control means including a second bundle of hoses extending between said first-mentioned mine roof support and said neighboring mine roof support, main control valves which are indirectly remotely controlled through said second bundle of hoses and arranged to select said second consumers, and conduits extending between said second consumers and said main control valves and arranged to apply pressure to the former, said further conduits having an inner diameter which exceeds the inner diameter of the hoses of said bundles.

4,225,272

APPARATUS FOR CONTROLLING THE ACTIVATION AND DE-ACTIVATION OF A VACUUM ASSEMBLY CONNECTED TO A CONDUIT SYSTEM

Kaj Palmvist, Björkbogatan 18 A, S-212 32 Malmö, Sweden den

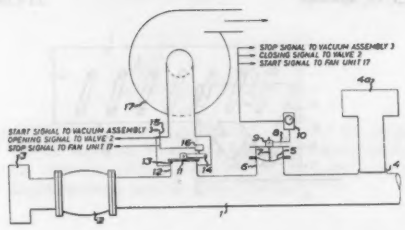
Filed Feb. 8, 1979, Ser. No. 10,247

Claims priority, application Sweden, Feb. 22, 1978, 7802056

Int. Cl.³ B65G *53/66*

U.S. Cl. 406—15 **2 Claims**

1. An apparatus for controlling the activation and de-activation of a vacuum assembly **(3)** which is connected to a conduit system **(1)**, such as a suction conveyance system for a central cleaning system, in order to maintain a partial vacuum in the conduit system, said system being provided with suction sockets **(4)** which may be opened for coupling in vacuum-driven appliances **(4*a*)** and which are self-closing when said vacuum-driven appliances are disconnected, comprising a first sensing means **(5, 7, 8, 9)** operative to sense that state in which all of said suction sockets **(4)** are closed, in order to emit a stop signal to the vacuum assembly **(3)**, and a second sensing means **(11, 15, 16, 17)** operative to sense the opening of one or more suction sockets **(4)** in order to emit a start signal to said vacuum assembly **(3)**, said second sensing means **(11, 15, 16, 17)** including a fan unit **(17)** which is disposed to receive, as its start signal, the stop signal emitted to said vacuum assembly **(3)** in order, when said vacuum assembly **(3)** is closed, to maintain a


STOP SIGNAL TO VACUUM ASSEMBLY 3
CLOSING SIGNAL TO VALVE 2
START SIGNAL TO FAN UNIT 17
START SIGNAL TO VACUUM ASSEMBLY 3
OPENING SIGNAL TO VALVE 2
STOP SIGNAL TO FAN UNIT 17

certain partial vacuum in said conduit system **(1)**, and an air-flow sensing device **(11)** which is operative to sense the air flow in said conduit system **(1)**, which occurs when one or more suction sockets **(4)** in said conduit system **(1)** are opened, in order to actuate a switch **(16)** disposed in an electric circuit **(15)** in such a manner that a start signal is emitted to said vacuum assembly **(3)**, said fan unit **(17)** being disposed to receive, as its stop signal, the start signal emitted to said vacuum assembly **(3)**.

4,225,273

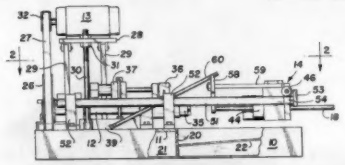
APPARATUS FOR THREADING RODS

Robert C. Womack, Dallas, Tex., assignor to AAA Products International Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 841,665, Oct. 13, 1977, abandoned. This application May 19, 1978, Ser. No. 907,504

Int. Cl.³ B23G *1/00*; B23Q *5/22*; B23G *11/00*

U.S. Cl. 408—12 **26 Claims**



1. Threading apparatus comprising

a support base;

a drive spindle mounted for rotation on said base; a threading head nonrotatably mounted on said drive spindle in axial alignment therewith; drive means for rotating said drive spindle in at least one direction;

a carriage mounted on said base for free forward and rearward reciprocating movement in a direction parallel to the rotational axis of said threading head; stop means for limiting the rearward movement of said carriage away from said threading head, and defining a rear limit position for said carriage;

a collet chuck mounted on said carriage, disposed in axial alignment with said threading head, for rigidly clamping a work rod; said carriage and said collet chuck being configured to enable the work rod to be passed through said chuck;

substantially frictionless support means supporting said carriage for said reciprocating movement, to enable said carriage and clamped work rod to follow freely the lead

of said threading head during engagement thereof with the work rod;

a movable rod stop supported on said carriage; said rod stop having a normal interference position to limit forward movement of a rod inserted in said collet chuck;

means, responsive to movement of said carriage away from said rear limit position, for moving said rod stop out of said interference position;

actuator means, mounted on said base, for controlling selected functions of a threading cycle of said apparatus including the opening and closing of said collet chuck and the operation of said threading head; trip means mounted on said carriage for activating said actuator means in response to selected movements of said carriage relative to said base.

4,225,274

DRILLING TOOL

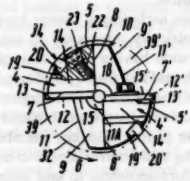
Otto Katz, Horb-Bildechingen, Fed. Rep. of Germany, assignor to Ledermann GmbH & Co., Horb, Fed. Rep. of Germany

Filed Apr. 26, 1979, Ser. No. 33,375

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 7812666[U]

Int. Cl.³ B23B *51/00*; B27G *13/00*

U.S. Cl. 408—225 **24 Claims**



1. A tool for drilling holes, especially a cylinder head drill, woodworking drill, and the like, comprising:

a carrier member having a cutting means retaining end, a chucking end opposite to said cutting means retaining end, and a circumferential receiving portion at said cutting means receiving end;

at least one first cutting means operatively connectible to said cutting means retaining end of said carrier member for endwise cutting with said tool;

at least one second cutting means operatively connectible to said cutting means retaining end of said carrier member and projecting axially beyond said cutting means retaining end for defining the diameter of the hole to be produced with said tool, and including:

at least one cutting edge;

a contact surface adapted to provide at least one point of contact with said receiving portion;

a guide surface diametrically opposite to said contact surface and substantially parallel thereto; and

means for operatively retaining said first and second cutting means on said cutting means retaining end of said carrier member.

4,225,275

DRILL BIT

William L. Elliott, P.O. Box 67, Millwood, Va. 22646

Filed Mar. 10, 1978, Ser. No. 885,284

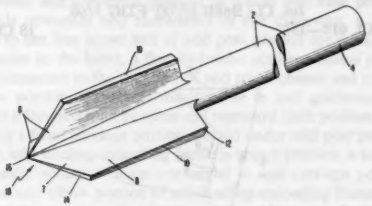
Int. Cl.³ B23B *51/08, 51/10*

U.S. Cl. 408—229 **5 Claims**

1. A drill bit for drilling right circular cylindrical holes in materials such as wood or plastic to a depth greater than the length of said bit, comprising:

(a) an elongated shank defining an axis;

(b) three elongated, substantially planar cutting blades secured to and radially extending from one end of said shank, each blade having a main cutting edge parallel to said axis and a cutting point edge, the main cutting edges of said blades defining a right circular cylinder coaxial with said axis and defining the length of said bit, said blades and shank defining unobstructed chip clearance channels being substantially constant in area for the length of said bit and being open for the length of said shank;



(c) a countersink cutting point at one end of said shank formed by said cutting point edges, the cutting point edges defining a right circular cone coaxial with said axis, the base of said cone being congruent with one end of the cylinder defined by said main cutting edges, and, except for the apex of said cone where said cutting point edges join, corresponding points on said cutting blades are 120° apart around said axis.

4,225,276

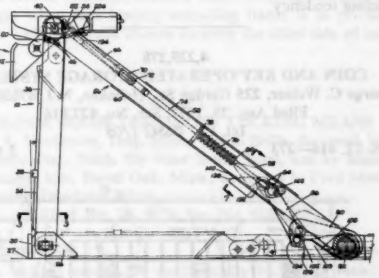
FIFTH WHEEL FOR RAILWAY TRAILER HITCH INCLUDING A ONE-WAY GATE

Patricia S. Stoller, Plymouth, Mich.; James C. Hammonds, St. Charles, and Ronald D. Van Dyke, Florissant, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,334

Int. Cl.³ B60D *1/12*; B60P *7/08*; F16B *9/00*

U.S. Cl. 410—64 **18 Claims**



1. A trailer hitch head comprising:

a pair of jaws which engage the kingpin of a trailer to hold the kingpin in place; said jaws held in closed position by a locking member which is biased to an engaged position with said jaws by at least one stiff spring; a head linkage adapted to engage the locking member to move the locking member to open position against the bias of said stiff spring; a one-way kingpin gate located in the front portion of said head; said head linkage adapted to engage a gate actuator which automatically engages said one-way gate and pivots the same to open position allowing exit of the kingpin; a handle located in the rear portion of said head having a keeper which engages a slot in said locking member when said locking member is in open position to hold the locking member in open position.

4,225,277

CHARGING DEVICE FOR FURNACES

Johannes J. Martin, Leopoldstrasse 248, 8000 München 40, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 717,550, Aug. 25, 1976, abandoned. This application Aug. 3, 1978, Ser. No. 930,568
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1975, 2538380
Int. Cl.[2] B65B 69/00; F23G 5/00
U.S. Cl. 414—198 18 Claims

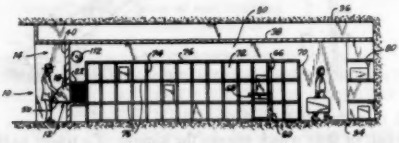
1. In a furnace, a combination comprising a combustion chamber having an inlet and a charging edge inwardly spaced from said inlet; path defining means, including a gravity chute below said inlet and having a first wall and a second wall spaced from each other so as to define a path therebetween along which refuse bags move under the influence of gravity towards said charging edge; and means for preventing compacting and retention of the refuse in said path, including ripping elements mounted on each of said walls along said path for ripping said bags open solely as a function of the gravity movement of said bags over and in contact with said ripping elements, so that the refuse contained in said bags is liberated and loose refuse can drop out of the ripped bags freely and solely under the influence of gravity in direction towards said charging edge leading into said chamber, at least some of said ripping elements having ripping edges inclined downwardly relative to the movement of the bags in said path to thereby facilitate movement of the refuse in said path towards said charging edge and counteract any refuse retarding and compacting tendency.

4,225,278

COIN AND KEY OPERATED STORAGE SYSTEM

George C. Weiner, 225 Garden St., Hoboken, N.J. 07030

Filed Aug. 25, 1977, Ser. No. 827,816
Int. Cl.[2] B65G 1/06
U.S. Cl. 414—273 5 Claims



1. An automated storage facility for the temporary storage of articles comprising:

an access station for the deposit and retrieval of articles to be stored, said access station including an access opening therein and a door member slidably disposed with respect to said access opening,

a plurality of storage facilities arranged in a bank at a location remote from said access station, said plurality of storage facilities comprising an array of storage cubicles arranged in a plurality of tiers one atop another along a row,

a plurality of containers, one for each of said storage cubicles, each of said containers including a door closure member movable from a first closed position to a second open position, a lock device on said door closure member and a key member removably disposed in said lock device for locking and unlocking said door,

transport means movable to and between a position adjacent said access station and a position removed from said access station along a path adjacent to and parallel with the row of storage cubicles,

said transport means including a platform adaptable to receive said containers and transport the same from said storage cubicles to a position adjacent said access station, said platform being elevatable between a plurality of positions and being movable laterally with respect to the path of movement of said transport means so as to be adapted to deposit and retrieve said containers from preselected ones of said storage cubicles,

control means located adjacent said access station and electrically connected to said transport means and operable to select one of a plurality of said containers available to receive said articles to be stored,

coin receiving means mounted at said access station, and

switch means connected to said coin receiving means and said control means and responsive to the deposit of a coin in said coin receiving means for actuating said transport means to transport said selected one of said containers to said access station,

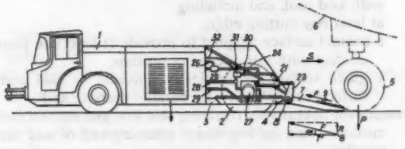
said access station including a matrix system and a circuit controller electrically connected to said control means, said matrix system having a plurality of key insert positions with each said key insert position corresponding to a separate one of said plurality of storage cubicles and being arranged to receive a corresponding said key member, the insertion of the proper said key member in said matrix system actuating said control means to initiate retrieval of the container corresponding to said inserted key member and transport of said container to said access station.

4,225,279

AIRPORT TOWING VEHICLE FOR HANDLING LARGE TRANSPORT AIRCRAFTS

Jean J. Boyer, Montchauvet, France, assignor to Societe Anonyme Secmafer, Bechelay Mantes la Jolie, France

Filed Apr. 3, 1978, Ser. No. 892,942
Claims priority, application France, Apr. 7, 1977, 77 10558; Jul. 1, 1977, 77 20284; Nov. 21, 1977, 77 34938
Int. Cl.[2] B60P 29/00
U.S. Cl. 414—428 12 Claims



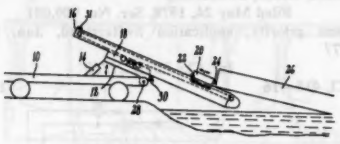
1. A towing vehicle capable of handling a wheel of an aircraft comprising: a movable chassis having a platform thereon, an access ramp pivotally connected at one end to an edge of the platform, the lower surface of the access ramp defining a sliding shoe for contacting and sliding along the ground, and at least one row of rollers mounted on said ramp and arranged offset from and parallel with the end of the access ramp opposite to said pivotally connected end such that the rollers protrude above the upper surface of the access ramp, the rollers positioned above the lower surface of the access ramp such that the aircraft wheel can move over the rollers onto the upper surface of the platform and only the sliding shoe portion of the ramp is capable of contacting the ground.

4,225,280

TRAILER FOR TRANSPORTING AND LAUNCHING FLOATING BOX CAISSONS

Roger Brunet, La Seyne-sur-Mer, and Gerard Marenco, Six-Fours-les-Plages, both of France, assignors to Constructions Navales et Industrielles de la Mediterranee, La Seyne-sur-Mer, France

Filed Apr. 17, 1978, Ser. No. 897,159
Claims priority, application France, Apr. 27, 1977, 77 12715
Int. Cl.[2] B60P 1/30
U.S. Cl. 414—479 **3 Claims**



1. A trailer for transporting, launching and retrieving floating box caissons, said trailer comprising:

a conventional road chassis;

a tip frame mounted above said chassis and pivotally connected about a pivot to the rear end of said chassis;

means for pivoting said tip frame about said pivot from a first, horizontal position to a second, inclined position;

a sub-frame slidably mounted on said tip frame and movable therealong between a first, forward position and a second, rearward position;

a hauling carriage slidably mounted on said sub-frame and movable therealong between a first, forward position and a second, rearward position;

means, associated with said tip frame, said sub-frame and said hauling carriage, for moving said sub-frame between said first and second positions thereof with respect to said tip frame and for moving said hauling carriage between said first and second positions thereof with respect to said sub-frame; and

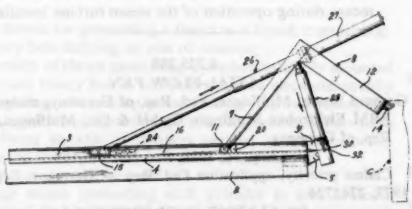
lock means, mounted on a rear end of said hauling carriage, for locking engagement to a floating box caisson, such that movement of said hauling carriage between said first and second positions thereof moves the floating box caisson along the top of said sub-frame.

4,225,281

SELF-LOADING CONTAINER CARRIER TRUCK

Jean-Marie Bibeau, 109 Houle Blvd., St. Gabriel de Brandon; Jacques Bibeau, 4621 Castel d'Autray, and Marcel Bibeau, 4471 Castel d'Autray, both of St. Felix de Valois, all of Canada

Filed Sep. 20, 1978, Ser. No. 944,016
Claims priority, application Canada, Jan. 19, 1978, 295268
Int. Cl.[2] B60P 1/28, 1/64
U.S. Cl. 414—498 **9 Claims**



1. A self-loading container carrier truck comprising a truck chassis, a guideway mounted on said truck chassis and extending longitudinally thereof, a loading-unloading frame of L-shaped configuration comprising a front post portion and a rearwardly extending base portion rigid with said post portion and forming an elbow portion therewith, said base portion operatively engaging said guideway and displaceable along the latter, said loading-unloading frame movable along said guideway between rearmost and foremost positions and also pivotable with respect to said guideway about an axis transverse to said guideway at the rear end of said base portion between a rest position in which said base portion is coincident with said guideway and a pivoted position in which said base portion extends upwardly and rearwardly of the guideway, a hook fixed to the free upper end of said post portion for hooking a container to the latter, a first hydraulic actuator means pivotally connected to the rear end of said truck chassis and to said elbow portion, a carriage displaceable in said guideway between a forward limit position and rearward limit position, and having a front carriage portion located under said post portion when said loading-unloading frame is in rest position, a second hydraulic actuator means connected to said carriage portion and to said elbow portion of said loading-unloading frame, and retaining means to releasably maintain said carriage in its forward and rearward limit positions respectively, said loading-unloading frame taking a container-carrying position when in rest position and in foremost position, and taking a container-releasing and pick-up position when in pivoted and rearmost position, said first hydraulic actuator means extending longitudinally of said truck chassis in the rest position of said loading-unloading frame and operable to move said carriage and loading-unloading frame longitudinally of said chassis between said forward and rearward limit position of said carriage and said foremost and rearmost position of said loading-unloading frame, and also operable to pivot said loading-unloading frame from its pivoted position to its rest position, said second hydraulic actuator means operable to pivot said loading-unloading frame from its rest position to its pivoted position, said second hydraulic actuator means adapted to be operated when said first hydraulic actuator means has moved said loading-unloading frame to its rearmost position, so as to pivot said loading-unloading frame towards its container-relreasing and pick-up position, said first and second hydraulic actuator means being arranged in complementarily opposite relationship, one of said hydraulic actuator means undergoing retraction upon extension of the other hydraulic actuator means, said first and second hydraulic actuator means forming two sides of a triangle when said loading-unloading frame is in pivoted position with said truck chassis forming the third side of said triangle.

4,225,282

BACKHOE BOOM TRANSPORT LOCKING MEANS

Walter A. Nordstrom, Troy, Mich.; Bruno Brilts, deceased, late of Royal Oak, Mich. (by Nina Brilts, heir), and by Rasma Dumoulin, heir, Royal Oak, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 26, 1978, Ser. No. 918,910
Int. Cl.[3] B66F 9/00
U.S. Cl. 414—694 **4 Claims**

1. A locking means for mechanically locking a backhoe boom in a transport position on an earthmoving machine,

the boom being supported for swinging movement about a horizontal pivot means carried on a swing post that is coupled by a vertical pivot means to a frame means of the earthmoving machine,

the locking means comprising a lever means fulcrummed intermediate its ends on the swing post,

the lever means at one of its ends and the boom having a first coacting lever means engageable in raised position of the boom for holding the latter in a raised transport position,

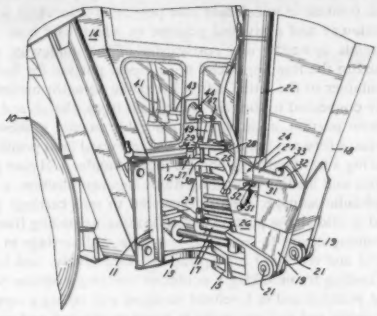
the lever means at its other end overlying the frame means,

the frame means and overlying lever means end having a second coacting latch means comprising a depending key on the overlying lever means and engageable with a slotted cam block mounted on the swing post support frame,

the depending key being positionable within a slot in the cam

block when the swing post is centrally positioned on its support frame,

the depending key and slotted cam block coacting to hold the swing post and thereby the boom against swinging movement about the swing post vertical axis,



and manipulable means accessible at an operator's station on the earthmoving machine for engaging or releasing the locking means from the boom and swing post.

4,225,283

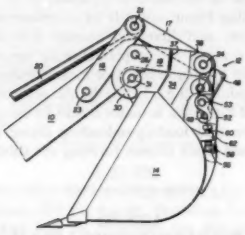
BACKHOE BUCKET QUICK COUPLING

Joe L. Baker, Carman, Ill., and Lanny J. Roth, Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 15, 1979, Ser. No. 12,270

Int. Cl.³ E02F *3/70*

U.S. Cl. 414—723 **3 Claims**



1. An attachment and release device for attaching an implement to a loader scoop arm comprising:

(a) an universal implement mounting linkage pivotally mounted to one end of said scoop arm for receiving various types and sizes of implements;

(b) said linkage having a generally four-bar configuration including implement mounting arms;

(c) said mounting arms being pivotally mounted at one of their ends to said scoop arm, each said mounting arm having a hook-like portion;

(d) an over-center mechanism mounted between the other ends of said mounting arms, a locking lever pivotally mounted to said over-center mechanism;

(e) upstanding brackets mounted on said implement said brackets having mating surfaces for locking engagement with said implement mounting arms;

(f) said hook-portons on said mounting arms engaging lateral projections mounted on said implement brackets and said over-center mechanism engaging locking means mounted on said implement during latching of said implement to said mounting linkage; and

(g) said locking lever being pivoted in a first direction wherein the longitudinal extent of each mounting arm is drawn down against the mating surfaces and projections on said implement brackets to lock said implement to said mounting linkage and said locking lever being pivoted in a second direction to release said implement from said mounting linkage.

4,225,284

SAFETY SYSTEM FOR A STEAM TURBINE INSTALLATION

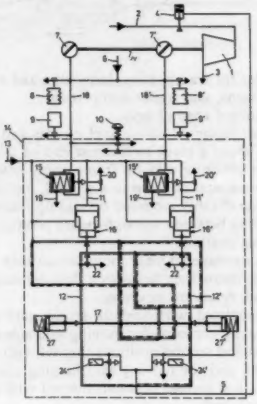
Jaroslav Masek, Wettingen, and Franz Suter, Gebenstorf, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 24, 1978, Ser. No. 909,051

Claims priority, application Switzerland, Jun. 8, 1977, 7035/77

Int. Cl.² F01D *21/20*

U.S. Cl. 415—16 **14 Claims**



1. A safety system for a steam turbine installation, comprising:

stop valve means for selectively stopping operation of the steam turbine;

first safety means for sensing operating conditions of the steam turbine installation, the first safety means having at least first and second channel portions, each channel portion including a plurality of safety devices;

second safety means for controlling the stop valve means in response to the first safety means, the second safety means having at least first and second channel portions, each channel portion of the second safety means corresponding to one of the channel portions of the first safety means; and

separating relay means for permitting testing of the safety devices of each channel of the first and second safety means during operation of the steam turbine installation.

4,225,285

AXIAL-FLOW FAN

Gerhard Sturm, Mulfingen, Fed. Rep. of Germany, assignor to EBM Elektrobau Mulfingen GmbH & Co., Mulfingen, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,168

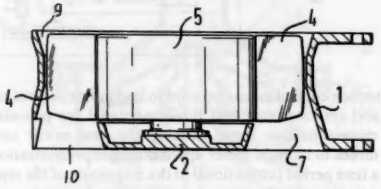
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742734

Int. Cl.³ F04B *35/04;* **F04D** *29/54*

U.S. Cl. 415—207 **7 Claims**

1. An axial-flow fan, comprising an impeller means having a predetermined axial length and including an impeller and a supporting member, and a hollow elongated casing having a circumferential wall, an inlet and an outlet axially spaced from

said inlet and defining together with said circumferential wall the interior of said casing accommodating said impeller means, said interior having an axial length corresponding to said predetermined length of said impeller means, whereby substantially the whole axial length of the interior of the casing is taken up by said impeller means, said circumferential wall comprising a first conical annular portion adjacent to said inlet and diverging in the direction from said outlet to said inlet and defining the first maximum cross-sectional dimension of said



interior at said inlet of the casing, a second conical annular portion adjacent to said outlet and diverging in the direction from said inlet to said outlet and defining the second maximum cross-sectional dimension of said interior at said outlet of the casing, and an intermediate portion interposed between said first conical annular portion and said second conical annular portion, the axial dimensions of said second, intermediate and first portions being in proportion to each other in the order of 8:7:4.

4,225,286

THRUST GENERATING DEVICE

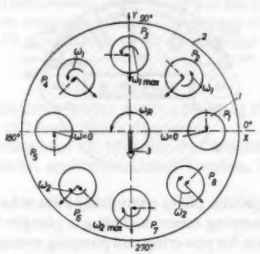
Werner Fork, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jan. 16, 1978, Ser. No. 869,895

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701914

Int. Cl.[3] **F01D** *1/36;* **F03B** *5/00*

U.S. Cl. 416—4 **2 Claims**



1. A device for generating a thrust in a liquid, comprising:

a rotary hub defining an axis of rotation;

a plurality of thrust generating cylinders rotatably mounted on said rotary hub in uniformly spaced circumferentially extending relationship, means for driving said rotary hub and said thrust generating cylinders, said cylinders each defining an axis of rotation parallel to and uniformly spaced from the axis of rotation of the hub;

a common control bar; and

linkage means connecting each cylinder to said common control bar, a pinion connected to the cylinder; a rack pivotably mounted to said common control bar and engageable with the pinion, wherein each cylinder changes its direction of rotation, and thus the direction of the generated thrust, each half revolution of the hub, and wherein said common control bar is connected to each linkage means for occupying an eccentric relationship with the hub axis of rotation during the driving of said cylinders with said eccentric relationship dependent on the driving force and direction and for occupying a coincident position with respect to said hub axis of rotation during an idling operation of said driving means.

4,225,287

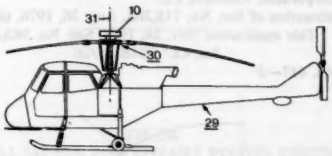
VIBRATION ABSORBER FOR HELICOPTER

Alan H. Vincent, East Coker, and Stephen P. King, Stoke-sub-Hamdon, both of England, assignors to Westland Aircraft Limited, Yeovil, England

Division of Ser. No. 761,310, Jan. 21, 1977, Pat. No. 4,145,936. This application Nov. 6, 1978, Ser. No. 957,853

Int. Cl.[3] **B64C** *27/06;* **F16C** *15/00*

U.S. Cl. 416—145 **7 Claims**



1. A helicopter including a rotor system having a plurality of rotor blades arranged for rotation about a generally vertical axis and a translational vibration absorber arranged for rotation with the rotor for rotation about the axis of rotation, the absorber comprising a support attached to the rotor system, a mass portion encircling the axis of rotation, and a plurality of resilient arms extending in a spaced-apart sprial pattern between the support and the mass with a free end of each arm separately attached to said mass to carry said mass so that, during operation, the mass is rotated with the rotor system in a plane substantially perpendicular to the axis of rotation and is capable of substantially equal resilient deflection in any direction within its plane or rotation, the absorber being de-tuned torsionally at a selected rotor design speed and being tuned so as to have, at the selected speed, a translational or in-plane natural frequency corresponding to the frequencies at which vibration absorption is required, thereby reducing in-plane rotor induced vibrations.

4,225,288

PUMP SET COMPRISING A LIQUID RING VACUUM PUMP PRECEEDED BY A COMPRESSOR

Kurt Mugele, and Bodo Nagel, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 9, 1975, Ser. No. 585,374

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1974, 2430314

Int. Cl.[2] **F04B** *41/06*

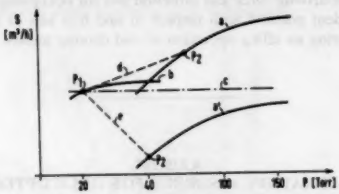
U.S. Cl. 417—2 **3 Claims**

1. Apparatus for suctioning off and compressing compressible medium below 100 Torr suction pressure comprising:

(a) a side channel ring compressor having its input coupled to a space from which the media is to be suctioned off;

(b) a liquid ring vacuum having its input coupled to the

output of said side channel ring compressor, the suction capacity of said liquid ring vacuum pump being designed



for the pressure ratio obtainable by said side channel ring compressor.

4,225,289

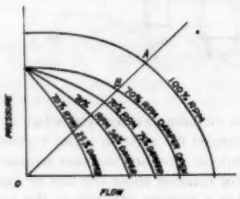
CENTRIFUGAL FAN AIR CONTROL SYSTEM

Jerry D. Burkett, Hopewell Junction, N.Y., assignor to Ecolaire Incorporated, Malvern, Pa.

Continuation of Ser. No. 718,303, Aug. 26, 1976, abandoned. This application Nov. 24, 1978, Ser. No. 963,608

Int. Cl.³ F04B *49/06*

U.S. Cl. 417—3 **7 Claims**



1. A method of controlling air flow comprising:

(a) providing a centrifugal fan with dampers or vanes upstream from a fam impeller, driving said impeller by an electric motor having a speed control circuit which includes means for converting slip losses into primary power coupled to said motor,

(b) controlling the air flow from said centrifugal fan in response to a flow demand signal only be changing the velocity of the fan impeller when the flow is in excess of the flow corresponding to a predetermined crossover point,

(c) providing said dampers or vanes with an operative range of adjustment so that the dampers or vanes are fully open at said crossover point, and

(d) controlling air flow from said centrifugal fan in response to a flow demand signal where the flow rate is below that corresponding to said crossover point only by changing the position of said dampers or vanes while maintaining the speed of said impeller constant and corresponding to the impeller speed at said crossover point.

4,225,290

PUMPING SYSTEM

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Feb. 22, 1979, Ser. No. 13,986

Int. Cl.³ F04B *49/00*

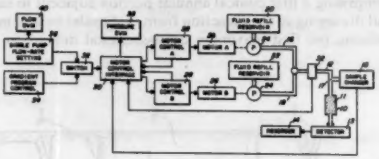
U.S. Cl. 417—18 **26 Claims**

1. A circuit for compensating for pulsations in pump flow-rate by controlling pump motor speed during delivery, refill, and repressurization periods of a pump cycle comprising:

a first pump driven by a first motor;

means for providing at least one signal representing pump flow-rate;

first motor control means coupled to said motor and responsive to said flow-rate signal for driving the first motor at a speed proportional to said flow-rate signal during the delivery period of the pump cycle and at an increased speed during the refill and repressurization periods of the pump cycle; and



interface control means coupled to said motor control means and responsive to said flow-rate signal for providing a repressurization signal causing the first motor control means to increase motor speed during repressurization for a time period proportional to the magnitude of the repressurization signal.

4,225,291

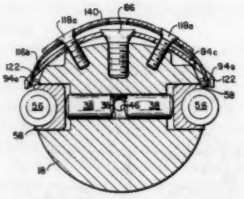
FUEL INJECTION PUMP AND PLUNGER CONTROL MEANS THEREFOR

Gerald R. Bouwkamp, West Hartford; Charles W. Davis, Simsbury; Wesley B. Gilbert, Windsor, and Charles J. Donahue, Enfield, all of Conn., assignors to Stanadyne, Inc., Windsor, Conn.

Filed Dec. 12, 1977, Ser. No. 859,847

Int. Cl.³ F04B *29/00, 19/02*

U.S. Cl. 417—214 **40 Claims**



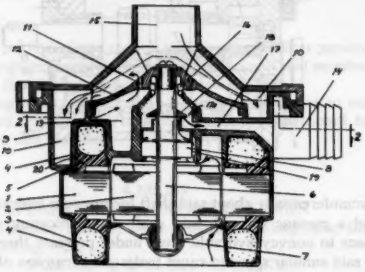
1. A fuel injection pump comprising a rotor having a transverse bore, pumping means including a plunger in said bore, actuating means for powering said pumping means to cause the pumping means to pressurize pulsed charges of fuel, and means for limiting the maximum stroke of the pumping means comprising a leaf spring member attached to the rotor with one end overlying said pumping means and engageable thereby to provide a stop limiting the outward movement of the said pumping means, said leaf spring member being rigid under the forces imposed thereon by said pumping means during a first speed range extending up to a predetermined intermediate speed within the operating range of the pump to limit the maximum pumping stroke to a fixed level within said first speed range, said leaf spring member exerting a spring force which is less than the opposing force exerted thereon by said pumping means during a second speed range above said intermediate speed to flex the leaf spring increasingly with increasing speed to increase the maximum pumping stroke gradually as speed increases within said second speed range.

4,225,292

LIQUID COOLED PUMP MOTOR UNIT

Stig L. Hallerbäck, Västra Frölunda, and Leif Lachonius, Surte, both of Sweden, assignors to Aktiebolaget SKF, Goteborg, Sweden

Filed Dec. 21, 1977, Ser. No. 862,933
Claims priority, application Sweden, Feb. 2, 1977, 7701002
Int. Cl.[3] F04B 39/06
U.S. Cl. 417—367 4 Claims



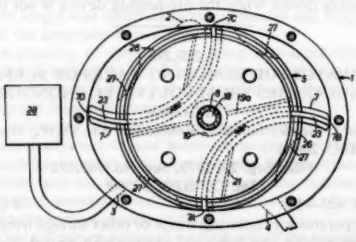
1. A pump motor assembly comprising a stator (1) with windings (3), said stator being imbedded in a plastic molding material (5) and surrounded by a stator casing (4), a rotor shaft (6) mounting a rotor (2) in a rotor chamber in said stator, a diffuser housing (9) arranged adjacent said stator and enclosing at least partly the stator windings, said stator casing (4) and diffuser housing (9) being an integral one-piece assembly, means defining a flow channel (10) in said diffuser housing for circulation of a cooling medium from an inlet (15) to an outlet (14) in said diffuser housing, a pump wheel (12) disposed in said flow channel mounted on said rotor shaft to effect circulation of the cooling medium through said flow channel (10) over the stator windings to cool the same, means defining openings (11) in said pump wheel allowing cooling medium to flow through the pump wheel and out from space (13) interiorly of the windings (3), said rotor shaft rotatably journalled in the casing on bearing means (8) and including a space (17^a) around the rotor shaft (6) between the pump wheel and the bearing means and at least one drainage channel (17) arranged to extend from said space (17^a) to exteriorly of the pump motor assembly.

4,225,293

ROTARY ENGINE WITH ARCUATE SEALING VANES

Goh H. Lee, 15 Lorong Siglap, Singapore

Filed May 15, 1978, Ser. No. 906,208
Claims priority, application United Kingdom, Nov. 3, 1977, 21477/77
Int. Cl.[3] F01C 1/00, 19/00, 21/04
U.S. Cl. 418—94 5 Claims



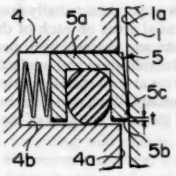
1. A rotary internal combustion engine comprising a casing defining an oval working chamber, a rotor mounted in the chamber for simple rotation about the chamber axis and resilient sealing means on the rotor to cooperate with the curved chamber wall to provide suction through an inlet port in the casing, compression and expansion, and exhaustion through an outlet port in the casing during rotation of the rotor, in which the sealing means include first arcuate sealing means mounted in the rotor to contact the curved chamber wall surface and second arcuate sealing means recessed into the first arcuate sealing means and projecting through groove means in each end face of the rotor to contact the chamber end wall surface, the first sealing means including a pair of first arcuate sealing members which are spring urged apart from one another into respective contact with the curved chamber wall surface on opposite sides of the rotor and the second sealing means including a second arcuate sealing member on each arcuate face of each first sealing member with the second arcuate sealing members of each adjacent pair also being spring urged apart from one another into into respective contact with the curved chamber wall surface on-opposite sides of the rotor.

4,225,294

OIL SEAL MEANS FOR ROTARY PISTON ENGINES INCLUDING A NITRIDED AND GROUND SURFACE

Seiichi Kakuwa; Toshibiko Hattori; Ichiro Yamagata, and Toshio Yamada, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jun. 7, 1978, Ser. No. 913,337
Claims priority, application Japan, Jun. 10, 1977, 52-69002
Int. Cl.[3] F01C 19/08, 21/04
U.S. Cl. 418—142 6 Claims



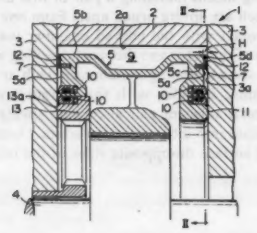
1. Rotary piston engine comprising a casing which includes a rotor housing having a trochoidal inner wall surface and a pair of side housings secured to the opposite sides of the rotor housing to define a rotor chamber by inner surfaces of the side housings and the inner wall surface of the rotor housing, and a substantially polygonal rotor having side surfaces and disposed in said rotor chamber for rotation with apex portions in sliding contact with the inner wall surface of the rotor housing, said rotor being formed at the side surfaces with oil seal grooves for receiving oil seals which are adapted to be brought into sliding contact with the inner surfaces of the side housings, each of said side housings being formed of iron-based material and including at the inner surfaces a layer of Fe-C-N compounds produced through a soft-nitriding treatment, said layer being of thickness not less than 1.0 microns, said side housing having a surface comprised of plateaus and pores, said plateaus having a surface roughness of between 0.3 and 15 microns, and said pores having depths between 1.0 and 300 microns for retaining lubricant to improve the lubricating property of said surface, and each of said oil seals having a sealing lip with hard chromium plating.

4,225,295

GAS SEAL MEANS FOR ROTARY PISTON ENGINES

Kazuma Shimizu; Shiso Kariyama; Yoshimitsu Takeda, and Masato Yoshimura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Oct. 26, 1978, Ser. No. 954,866
Claims priority, application Japan, Oct. 31, 1977, 52-131301
Int. Cl.³ F01C 19/08, 21/08
U.S. Cl. 418—142 5 Claims



1. Rotary piston engine including a casing which is comprised of a rotor housing having an inner wall surface of trochoidal configuration and a pair of side housings respectively having inner surfaces and secured to the opposite sides of the rotor housing, a substantially polygonal rotor disposed in said casing for rotation with apex portions in sliding contact with the inner wall surface of the rotor housing, said rotor having opposite side surfaces respectively confronting with the inner surfaces of the side housings and provided at radially central portions thereof with axially projecting lands adapted to engage slidably with the inner surfaces of the side housings to maintain clearances between the rotor side surfaces and the inner surfaces of the side housings radially outwardly of said lands, said rotor further having flanks defined between respective two of the apex portions and confronting to the inner wall surface of the rotor housing, side seal means provided on each side surface of the rotor and extending substantially along the flanks of the rotor at portions radially inwardly of the flanks to leave circumferential areas on each of the rotor side surfaces between the flanks and the side seal means, and filler means comprised of a fluoride resin and applied to each of the rotor side surfaces at areas at least radially outwardly of said side seal means for substantially filling said clearance between the rotor side surfaces and the inner surfaces of the side housings in said areas.

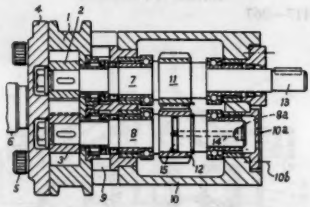
4,225,296

GEAR PUMP WITH TRANSMISSION GEARWHEEL ADJUSTMENT

Fritz Haupt, Regensdorf, Switzerland, assignor to Maag Gear Wheel & Machine Company, Zurich, Switzerland

Continuation of Ser. No. 744,782, Nov. 24, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,668
Claims priority, application Switzerland, Dec. 11, 1975, 160921/75
Int. Cl.³ F04C 1/08, 15/00; F16H 35/08
U.S. Cl. 418—206 4 Claims

1. A gear pump comprising a casing, intermeshing pumping gears carried in said casing, said pumping gears having a contact ratio of less than one, and gear transmission means connected to the respective pumping gears for rotating said pumping gears in synchronised relation with each other, said gear transmission means including intermeshed auxiliary gears, a first shaft having one of said auxiliary gears mounted thereon by an interference fit fixing the gear on the shaft by friction, said first shaft also having one of said pumping gears fixed thereon and axially spaced from said one auxiliary gear, a second shaft having the other one of said auxiliary gears fixed thereon, and also having the other said pumping gear secured thereon in axially spaced relation from the other one of said auxiliary gears, bearing means rotatably supporting said shafts in said casing, said bearing means for at least said first shaft comprising axially spaced rotary bearing elements and said one of said auxiliary gears being mounted on said first shafts between said bearing elements, an interface between said one auxiliary gear and said shaft having an annular space extending



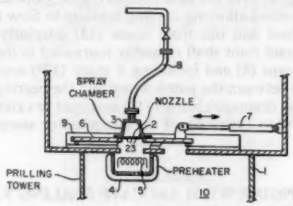
circumferentially about said shaft for pressure hydraulic fluid, and a passage through said shaft communicating with said space to convey hydraulic fluid under pressure therethrough to said annular space to cause hydraulic expansion of said one auxiliary gear to allow relative angular adjustment between said one auxiliary gear and said first shaft.

4,225,297

NOZZLE PRE-HEATING DEVICE IN A PRILLING APPARATUS

Shoji Tomita, and Tetsuya Tokunaga, both of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

Filed Nov. 14, 1978, Ser. No. 960,693
Claims priority, application Japan, Nov. 25, 1977, 52-140664
Int. Cl.³ B22D 11/01
U.S. Cl. 425—6 12 Claims



1. A nozzle pre-heating device for use in a prilling apparatus comprising a pre-heating chamber adapted to be open only at the upper portion thereof for pre-heating a nozzle and to shield said nozzle from the cooling effects of upwardly flowing gas, and means for moving said nozzle from the proximity of said pre-heating device when the pre-heating device is not in use.

4,225,298

APPARATUS FOR REMOVING WARPS OR SURFACE IRREGULARITIES FROM POLYVINYL PHONOGRAPH RECORDS

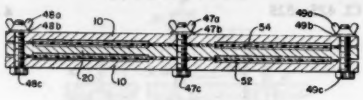
Norman J. Henderson, 2045 Rosemount Ave. N.W., Washington, D.C. 20010

Filed Sep. 25, 1978, Ser. No. 945,492
Int. Cl.² B29C 17/00
U.S. Cl. 425—11 9 Claims

1. Apparatus for removing warps or other surface irregularities from at least one polyvinyl phonograph record comprising:

first and second plate-like members, each having a center aperture and two elevated circular concentric surfaces on

one face thereof, one of said circular surfaces of each member being adapted to engage with the lead-in lip of a record disposed between said members and in a coaxial relationship with said members, the other of said circular surfaces of each member being adapted to engage with the



label portion of said record, said circular surfaces preventing engagement of the remaining portions of said members with the playing surface of said record; and

clamping means for applying variable axial forces to said record through said members to clamp said record between said members.

4,225,299

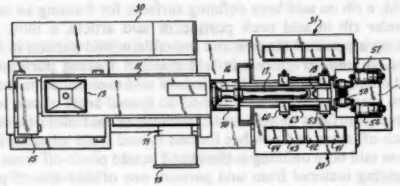
APPARATUS FOR EXTRUDING YARN

John S. Roberts, Ellicott, Md., assignor to Kling-Tecs, Inc., Mantoloking, N.J.

Filed Apr. 4, 1978, Ser. No. 893,370

Int. Cl.³ B29C *25/00*

U.S. Cl. 425—72 S **5 Claims**



1. Air quench extrusion apparatus for producing polypropylene yarns, comprising:

(a) an extruder mounted on a frame which supports the extruder near the top of and lengthwise of the apparatus, said frame comprising means for supporting the extruder above a floor of a building;

(b) a transfer tube extending forwardly from the extruder in the lengthwise direction of the apparatus.

(c) a distribution manifold connected to the transfer tube and extending laterally on opposite sides thereof;

(d) two spin blocks disposed one on each side of the apparatus and being connected to said manifold, each spin block extending in the lengthwise direction of the apparatus forwardly of said extruder;

(e) a plurality of quench cabinets arranged in two rows extending in the lengthwise direction of the apparatus with one row on each side of the apparatus below the spin block on that side of the apparatus, each quench cabinet being arranged for air to be blown through it laterally of the lengthwise direction of the apparatus and from inside of the apparatus outwardly;

(f) a plurality of shrouds, one being associated with each quench cabinet and defining quiescent hot zone between said quench cabinet and the spin block above it, each shroud being less than two feet long;

(g) a plurality of denier control roll means, one being disposed adjacent to and below each quench cabinet, and each such denier control roll means being adjacent said floor and less than eight feet below the bottom of the shroud associated with the quench cabinet above such denier control means;

(h) nip roll means arranged on each side of the apparatus and disposed in the lengthwise direction of the apparatus forward of said denier control roll means;

(i) said denier control roll means on each side of the apparatus being staggered in the vertical direction to allow separate yarn paths from said denier control roll means forwardly to said nip roll means on that side of the apparatus; and

(j) the arrangement being such that the apparatus can be installed and operated in a single story building.

4,225,300

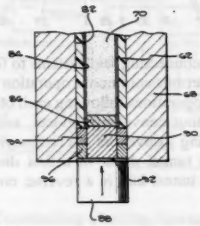
RELIABLE HIGH PRESSURE APPARATUS

Richard Latter, Annandale, Va., assignor to High Pressure Technology, Inc., Marina Del Rey, Calif.

Filed Aug. 27, 1979, Ser. No. 69,769

Int. Cl.² B30B *11/32*

U.S. Cl. 425—77 **16 Claims**



1. An apparatus for obtaining high temperatures and pressures comprising:

a body of high temperature and high pressure resistant material having a cylindrical opening therein;

a liner of an insulating material extending along the wall of said opening but stopping short of one end thereof adopted to receive a charge of material to be electrically heated and compressed located at least in part within said liner;

piston means for compressing said charge, within the cylindrical opening in said body;

end heater means in the vicinity of the end of said opening for counteracting the increased cooling at the ends of said opening;

means including lead material in engagement with said piston means for sealing said cylindrical opening to said piston means as it advances;

means including an annular zinc element mounted at the end of said liner for preventing flow outside of said liner; and

means for initially mounting said charge, said end heater means, said zinc element and said lead material so that the space extending from the inner edge of said liner across the opening at the end of liner is substantially free of both zinc and lead, whereby smooth and stable compression occurs when said piston is advanced.

4,225,301

PLANT FOR PRODUCING FIRED BRICK BLANKS

Claudio Eustacchio, Graz, Austria, assignor to Fuchs & Co. Aktiengesellschaft fur Elektro-Draht-Erzeugung und Maschinenbau, Graz, Austria

Filed Sep. 1, 1978, Ser. No. 939,039

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758847

Int. Cl.³ B28B *15/00*

U.S. Cl. 425—88 **18 Claims**

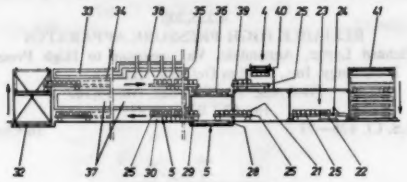
1. A plant for continuously producing fired brick blanks, comprising:

a material processing system for processing and producing brick blank raw material;

a molding and shaping system for transforming the raw material into brick blanks, said molding and shaping system including a multiple wire cutter for cutting strand segments into brick blanks and a spacing belt coupled to

the discharge end of said cutter for spacing said brick blanks in a predetermined spaced-apart manner;

a drying and firing system for drying and firing the brick blanks, said drying and firing system comprising a tunnel dryer and a tunnel kiln which are disposed in a common casing; and



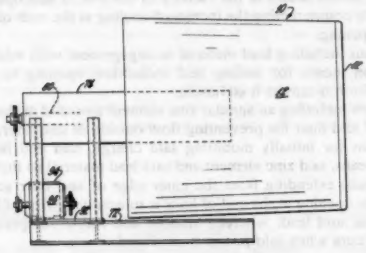
means for interconnecting said systems to form a processing line, which permits continuous operation with the individual working operations following each other directly, said means including conveying devices, said conveying devices including conveyors for conveying brick blanks through said tunnel dryer in a first direction and then through said tunnel kiln in a reverse, counterflow direction.

4,225,302

TANK FORMING MANDREL WITH TANK BOTTOM MOLD

Julius C. Brooks; Kenneth D. Pfeifer, both of Huntingdon, and Robert M. Sommerkamp, Mt. Union, all of Pa., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 19, 1979, Ser. No. 21,407
Int. Cl.[2] B29C *13/04, 23/00, 1/16*
U.S. Cl. 425—438 **3 Claims**



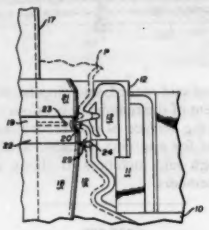
1. A rotatable mandrel comprising a generally cylindrical but tapered shell rotatable about a horizontal axis and providing an outer molding surface for the forming of a sidewall portion of a tank out of thermosetting resin and reinforcing material, a tank bottom or end cap mold adjacent a smaller end portion of the shell for the forming of a bottom or end cap portion of a tank integrally with the sidewall portion thereof, and a plurality of actuators mounted in the shell adjacent the tank bottom or end cap mold in equally arcuately spaced relationship to each other and each having a reciprocable member operatively connected to the tank bottom or end cap mold, the reciprocable members being extensible to free the sidewall portion of a tank from the shell and retractable to abut the smaller end portion of the shell with the tank bottom or end cap mold, the tank bottom or end cap mold having a peripheral flange portion which in effect is an extension of the shell when in abutting relationship therewith.

4,225,303

BLOW MOLDING DEVICES

Harry Crisci, New Castle, Pa., assignor to Northern Engineering & Plastics Corporation, New Castle, Pa.

Filed Feb. 21, 1979, Ser. No. 13,268
Int. Cl.[3] B29C *17/07*
U.S. Cl. 425—525 **4 Claims**



1. Blow molding devices for forming a blown plastic article from an elongated essentially tubular parison comprising; a sectional blow mold defining a cavity corresponding to the configuration of said blown plastic article, surfaces of said mold defining a bore for forming an article neck forming portion of said mold, said bore opening into the cavity of said mold, a rib on said bore defining surfaces for forming an inner annular rib in said neck portion of said article, a blow pin having a mandrel thereon and movable in said parison in said bore, an annular groove in said mandrel spacing portions of said mandrel, said spaced portions of said mandrel arranged to form spaced closures with respect to spaced areas of said bore forming surfaces of said mold, sections of said mold forming pinch-off areas and notches formed in said mold adjacent said rib on said bore defining surfaces and in said pinch-off areas for receiving material from said parison, one of said spaced portions of said mandrel arranged to move said material in said notches whereby grooves blown in the inner surface of the annular rib of said blown plastic article are filled by said material and smoothed by said spaced portion of said mandrel so as to form a continuously smooth innermost surface on said annular rib of said blown plastic article, means in said mandrel establishing communication between said annular groove and said blow pin so that air from said blow pin moves by way of said groove toward said parison between said closures.

4,225,304

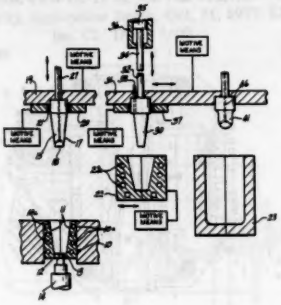
APPARATUS FOR THE PREPARATION OF HOLLOW PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Division of Ser. No. 911,359, Jun. 1, 1978, which is a continuation-in-part of Ser. No. 641,638, Dec. 17, 1975, Pat. No. 4,115,494, which is a division of Ser. No. 479,287, Jun. 14, 1974, Pat. No. 3,970,419, which is a continuation-in-part of Ser. No. 473,580, May 28, 1974, Pat. No. 3,966,378. This application Jan. 24, 1979, Ser. No. 5,960
Int. Cl.[3] B29C *17/07*
U.S. Cl. 425—526 **13 Claims**

1. An apparatus for forming oriented, blown objects of moldable plastic material requiring prolonged tempering cycles to obtain conditions suitable for orientation, said apparatus including a multiplicity of tempering molds in spaced relationship to each other for retaining and tempering parisons prior to orientation and blowing in a tempering cycle, means engageable with each one of said tempering molds for placing and leaving parisons to be tempered in each said engageable tempering mold seriatim at a first station, means for moving seriatim each of engageable tempering molds containing a parison prior to orientation and blowing from said first station to at least one second station spaced from and adjacent to said first station for prolonged tempering, a blow mold for forming said

tempered parisons into oriented, blown objects in spaced relationship to said second station, and means for removing said tempered parisons at the end of said tempering cycle prior to orientation and blowing from said tempering molds and plac-



ing same into said blow mold, whereby said tempering molds receive and release said parisons seriatim, and whereby the overall cycle of said apparatus is substantially unaffected by the number of said tempering molds.

4,225,305

COMBUSTION HEAD FOR A COMBUSTION CHAMBER

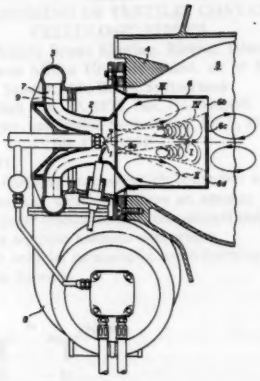
Herbert R. Hazard, Columbus, Ohio, and Vincenzo Recchi, Bari, Italy, assignors to Pietro Fascione, Milan, Italy

Filed Dec. 6, 1978, Ser. No. 967,005

Claims priority, application Switzerland, Dec. 23, 1977, 15974/77

Int. Cl.³ H01M *2/08*

U.S. Cl. 431—182 **3 Claims**



1. A combustion head for a combustion chamber, comprising a fuel-injection nozzle, a feed conduit for a pressurized oxygen-containing gas, a combustion space of generally cylindrical shape into which the outlet end of said feed conduit opens by way of a communication aperture dimensioned to create a pressure drop of between 75 and 150 mm water gauge during the passage of said gas, the diameter of said combustion space being between 2 and 6 times the diameter of said aperture, and a disc disposed at the outlet of said combustion space at an axial distance from the aperture of 3.5 to 5.5 times the diameter of said aperture, the diameter of said disc being such as to create a pressure drop of between 15 and 50 mm water gauge at the outlet of said combustion space.

4,225,306

METHOD OF CONTROLLING A HEATING FURNACE FOR STEEL INGOTS

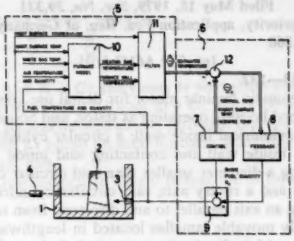
Hans-Joachim Wick, Dortmund, Fed. Rep. of Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,662

Claims priority, application Fed. Rep. of Germany, Jan. 3, 1978, 2808771

Int. Cl.³ F27D *7/00*; F27B *1/26*

U.S. Cl. 432—24 **4 Claims**



1. A method of controlling a heating furnace for steel ingots, particularly a soaking pit for steel ingots, comprising the steps of: charging the furnace with a basic fuel quantity for heating the ingots to rolling temperature by conducting fuel together with combustion air to the furnace; measuring ingot surface temperature and thermal data of the furnace; establishing heat balances; determining an estimated value for the ingot center temperature from furnace balance temperatures resulting from said step of establishing heat balances, together with said surface temperature; comparing said estimated ingot core temperature and said measured ingot surface temperature with predetermined wanted ingot center and ingot surface temperatures; and correcting said basic fuel quantity dependent on said comparing step.

4,225,307

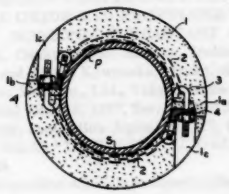
REFRACTORY INSULATION FOR SKID PIPES AND THE LIKE IN REHEATING FURNACES

Matthias R. Magera, 461 Fair Dr. #102, Costa Mesa, Calif. 92626

Filed Jun. 29, 1979, Ser. No. 41,985

Int. Cl.³ F27D *3/02*

U.S. Cl. 432—234 **11 Claims**



9. For use in combination with a water flowing pipe, an insulating sleeve of semi-circular cross section of a construction so as to mate completely with an identical semi-circular sleeve, said sleeves surrounding said pipe, each semi-circular sleeve comprising a J-bolt embedded in each sleeve and having a threaded shank projecting from one end portion, an eye for receiving said shank projecting from the other end portion of each sleeve for holding said sleeves together, a stainless steel mesh embedded in said sleeve and hooked onto the J-bolt at one end and to said eye at the other end and extending about

the inner circumference of the sleeve exposed through the insulating sleeve so as to make direct metal contact with the pipe, and a slot formed in the end portion of each semi-circular sleeve through which the threads of said J-bolt and eye extend, and a nut threaded to each threaded shank.

4,225,308

PNEUMATIC LAMINAR MOTOR FOR DENTAL USE

Gerd Lohn, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

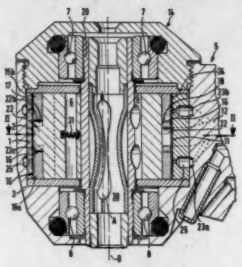
Filed May 15, 1979, Ser. No. 39,331

Claims priority, application Fed. Rep. of Germany, May 17, 1978, 2821560

Int. Cl.[3] **A61C** *1/05*

U.S. Cl. 433—132 **9 Claims**

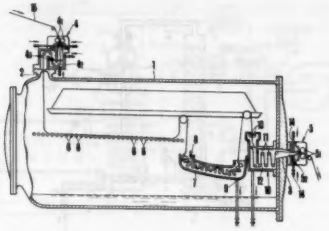
1. A pneumatic laminar motor for dental use comprising: a sleeve-shaped housing operating as stator, said housing having a circular cylindrical inside wall; a circular cylindrical rotor inside said inside wall and contacting said inside wall, said rotor having a diameter smaller than said circular cylindrical inside wall and a rotary axis; said circular cylindrical inside wall having an axis parallel to and displaced from said rotary axis; radially movable lamellas located in lengthwise slots of said rotor, said lamellas having outer ends facing said circular cylindrical wall; at least one air inlet opening for compressed air coming from a compressed air supply conduit; at least one air outlet opening discharging into a space between said rotor and said circular cylindrical inside wall; a bearing ring freely rotatable relative to and coaxial with said circular cylindrical inside wall, said bearing ring being located between said circular cylindrical inside wall and said outer ends of said lamellas contacting said bearing ring, said bearing being divided transversely forming at least two bearing ring sections, said bearing rings being arranged next to each other leaving an annular space in between, said rotor being connected rotation-proof to said bearing ring sections; said air inlet opening discharging into said annular space.



4,225,309
SHRINKAGE SETTING PROCESS FOR CLOTH MATERIAL

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works, Co. Ltd., Wakayama, Japan

Filed Oct. 18, 1978, Ser. No. 952,402
Claims priority, application Japan, Oct. 31, 1977, 52-130572
Int. Cl.[3] D06P *5/00*
U.S. Cl. 8—148 **2 Claims**



1. A shrinkage setting process for a cloth material wherein the cloth material is impregnated with a liquid selected from the group consisting of a caustic liquid, a liquid mixture prepared by mixing auxiliaries in a caustic liquid and a dyeing liquid, subjecting the impregnated cloth material to a hygrothermic treatment in a no tension state within a high pressure steamer the inside of which is kept at a high humid heat to shrink or dye the cloth material, then subjecting the cloth to a no tension boiling treatment carried out with a liquid flow within a boiling tank which is disposed inside the high pressure steamer; and then setting the degree of shrinkage of the cloth material by gradually cooling it to about 50° C.

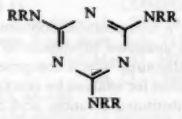
4,225,310
RESIN FINISHING OF TEXTILES CONTAINING CELLULOSIC FIBERS

Brian Acton, Aesch; Bruno Kissling, Riehen; Tibor Robinson, Birsfelden, and Milica Urosevic, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jun. 29, 1978, Ser. No. 920,495
Claims priority, application Switzerland, Jul. 5, 1977, 8240/77
Int. Cl.[2] D06P *3/82*
U.S. Cl. 8—491 **14 Claims**

1. A textile finishing process which comprises applying to a substrate containing cellulosic fibers an amount effective to improve the crease resistance and dimensional stability of said substrate of an aqueous medium comprising

(A) a water soluble, monomeric, resin-forming precondensate of the formula

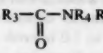


in which each R independently is H or $—CH_2OR_1$, where each R_1 independently is H or C_{1-4}alkyl, provided that at least 3 R groups are $—CH_2OR_1$ groups,

(B) a compound or mixture of compounds which have solvent properties for disperse dyes and affinity for polyester fibres and which increase the substantivity of disperse dyes to cellulose and selected from the group consisting of

(i) a polymeric condensation product of a polyalkylene glycol with an aldehyde,

(ii) a carboxylic acid amide of formula III



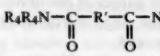
III

in which R_3 is H, C_{1-8}alkyl, or phenyl unsubstituted or substituted with up to 5 C_{1-2}alkyl groups,

and each R_4 independently is hydrogen or a polyglycol residue, the terminal hydroxyl group of which may be esterified by a C_{1-4} fatty acid,

provided that no more than one R_4 group may be hydrogen,

(iii) a carboxylic acid diamide of formula V

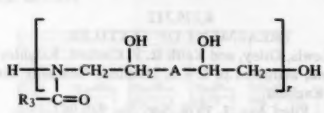


V

in which R′ is C_{1-8}alkylene, or phenylene unsubstituted or substituted with up to 4 C_{1-2}alkyl groups,

and R_4 is as defined above, provided that not more than one R_4 group on each nitrogen atom may be hydrogen, and

(iv) a low molecular weight polyamide of formula VII



VII

in which R_3 is as defined above, and A signifies a direct C-C bond or an alkylene group of 2-4 carbon atoms which may be interrupted by C_{2-3} alkyleneoxy groups, and r is a whole number greater than 15,

provided that the average molecular weight of the compound of formula VII is not greater than 2000,

(C) an N-methylol compound which contains at least one (C_{11-19}) straight-chain alkyl group and is capable of chemical reaction with the —OH groups of cellulose, and

(D) a catalyst system comprising the following three or four components:

(i) a hydrolysis-stable resin-forming N-methylol compound,

(ii) a catalyst comprising an acid reacting salt of a multivalent metal

(iii) an alkali metal sulphate or borate, and

(iv) optionally, phosphoric acid or an organic acid containing at least two carboxylic acid groups.

4,225,311
DYE COMPOSITION CONTAINING A COPOLYMER OF ETHYLENE OXIDE AND PROPYLENE OXIDE AS NONIONIC SURFACTANT

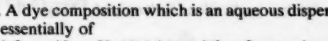
Yukihisa Niimi, Osaka; Junko Kakuse; Toshio Sato, both of Wakayama, and Hideo Kawanaka, Osaka, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1977, Ser. No. 861,302
Claims priority, application Japan, Dec. 27, 1976, 51-158038
Int. Cl.[3] D06P *1/22, 1/52, 1/613*
U.S. Cl. 8—524 **8 Claims**

1. A dye composition which is an aqueous dispersion consisting essentially of

(a) from 10 to 50 parts by weight of water-insoluble dye,

(b) from 10 to 150% by weight, based on the weight of said dye, of nonionic surfactant having the formula



wherein l, m and n each is an integer of one or more, the sum of l plus m plus n is in the range of from 100 to 350, and ((l+n)/m) is 2 or more, and

(c) from 89 to 30 parts by weight of water, said composition

having been prepared by pulverizing a mixture of (a), (b) and (c) until the average particle diameter of said dye is reduced to a size in the range of 0.1 to 1.0 micron.

4. A dye composition which is an aqueous dispersion consisting essentially of

(a) from 10 to 50 parts by weight of water-insoluble dye,

(b) from 10 to 150% by weight, based on the weight of said dye, of a mixture of

(i) nonionic surfactant having the formula

$$HO—C_2H_4O)_l(C_3H_6O)_m(C_2H_4O)_nH$$

wherein l, m and n each is an integer of one or more, the sum of l plus m plus n is in the range of from 100 to 350, and ((l+n)/m) is 2 or more, and

(ii) formalin condensate of an aromatic sulfonate, wherein the weight ratio of (i):(ii) is from 2:8 to 8:2, and

(c) from 89 to 30 parts by weight of water, said composition having been prepared by pulverizing a mixture of (a), (b) and (c) until the average particle diameter of said dye is reduced to a size in the range of 0.1 to 1.0 micron.

4,225,312

TREATMENT OF TEXTILES

David M. Lewis, Otley, and Keith R. F. Cockett, Keighley, both of England, assignors to I.W.S. Nominee Company Limited, London, England

Filed Aug. 1, 1978, Ser. No. 929,967

Claims priority, application United Kingdom, Aug. 4, 1977, 32803/77

Int. Cl.[2] **D06M** *3/02, 13/00*

U.S. Cl. 8—115.6 **17 Claims**

1. A method of treating keratinous fiber containing textiles comprising applying to the textile a water soluble, curable polymeric material in the presence of an alkaline compound, from an aqueous medium, and simultaneously or subsequently applying to the textile while the textile is in contact with said alkaline aqueous medium a compatible exhaustion agent which reduces the solubility of the polymeric material comprising a soluble inorganic salt, allowing the polymeric material to exhaust onto the textile and curing the polymeric material; the said polymeric material being selected from the group consisting of (a) Bunte salt compounds comprising a polyoxyalkylene polymeric chain backbone and at least two thiosulfate groups per molecule and (b) poly(carbamoyl-sulfonates) prepared by reaction of a polymeric di- or poly-isocyanate with a bisulfite.

4,225,313

DYEING AND PRINTING PROCESSES

Purushottam J. Kangle, Goregaon-Bombay, India, and Branimir Milicevic, Riehen, Switzerland, assignors to Ciba-Geigy, AG, Basel, Switzerland

Continuation of Ser. No. 402,244, Oct. 1, 1973, abandoned, which is a continuation of Ser. No. 222,664, Feb. 1, 1972, abandoned, which is a continuation of Ser. No. 819,964, Apr. 28, 1969, abandoned. This application Dec. 16, 1974, Ser. No. 532,965

Claims priority, application Switzerland, May 10, 1968, 6998/68

Int. Cl. D06p *1/90*

U.S. Cl. 8—474 **12 Claims**

1. A process for dyeing or printing textile material which consists essentially of first impregnating the textile material with a solution or dispersion of a dyestuff, subsequently air-drying said impregnated textile material, and thereafter fixing the dye by exposing said textile material, at atmospheric pressure, to the superheated vapor of at least one organic solvent, the fixing being performed at a temperature of from 80° to 200° C. without condensation of the solvent vapors.

4,225,314

CHEMICAL ANALYSIS AND MINERAL PROSPECTING

Denis J. C. Macourt, 73, Dickson Ave., Artarmon 2064, New South Wales, Australia

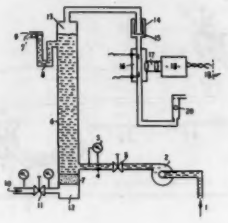
Filed Mar. 9, 1978, Ser. No. 884,956

Claims priority, application Australia, Mar. 9, 1977, PC9339

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.[2] **G01N** *1/10;* **G01J** *3/00;* **G01V** *5/00;* **G01N** *33/24*

U.S. Cl. 23—230 EP **8 Claims**



1. A method for prospecting for uranium or hydrocarbons by continuously detecting the presence of at least one normally gaseous radon or halogen component in an off-shore liquid as an indicator of the presence of uranium or hydrocarbons comprising the steps of subjecting said liquid to passage therethrough of dispersed bubbles of a chemically inert carrier gas of a type useful in plasma emission spectroscopy whereby said gaseous component contained in said liquid and any particulate matter components containing said gaseous component adsorbed as a coating thereon are entrained by said inert gas; removing said inert gas and said entrained components from said liquid; treating said particulate material to release said gaseous component coated thereon, and separating said particulate material from said gaseous component and said carrier gas; passing said carrier gas and said gaseous component into a plasma and spectroscopically examining the light emitted therefrom for the presence of spectral lines characteristic of at least one of said normally gaseous chemical components.

4,225,315

TRIAZINONES FROM AMIDINOUREAS

Chong M. Won, Warrington; Jerome J. Zalipsky, Melrose Park, and Dahyabhai M. Patel, Ambler, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Nov. 13, 1978, Ser. No. 960,070

Int. Cl.[2] **G01N** *31/06, 33/16*

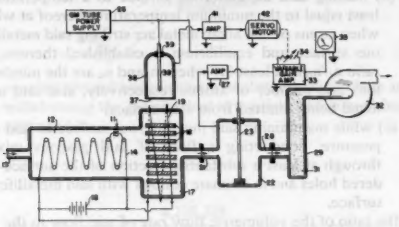
U.S. Cl. 23—230 PC **11 Claims**

1. A method of analyzing a composition containing an amidinourea in a mixture with unknown substances to determine the presence of said amidinourea which comprises preparing a sample of the composition for analysis by reacting the composition with an N,N-disubstituted alkanoic acid amide-acetal in the presence of hydrogen ion to form a cyclized amidinourea derivative capable of being vaporized and separated from the other components of said composition and thereafter separating said amidinourea derivative from the other components of said composition by vaporizing a solution of said composition and passing the vaporized composition, mixed with a carrier gas, through a gas chromographic column to separate the ingredients of said composition on the column in order to determine the amount of amidinourea present in said composition by ascertaining the amount of cyclized amidinourea derivative retained on the column.

4,225,316
CHEMICAL AGENT DETECTION METHOD AND APPARATUS

Seymour Z. Lewin, Bayside, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 28, 1961, Ser. No. 157,299
Int. Cl.[3] G01N *33/00*; G01T *1/00, 3/06*
U.S. Cl. 23—230.3 11 Claims



1. The method of detecting predetermined organic halogen compounds in a gas comprising the steps of directing a sample of said gas into a reaction chamber containing immobilized therein a halogen compound in which the halogen constituent is radioactive, providing environmental conditions in said chamber to promote a chemical reaction whereby said radioactiive constituent forms a mobile compound with a constituent of said organic halogen compound and passing said sample including any of said mobile compound generated out of said reaction chamber and into the presence of a radiation detector.

4,225,317
ALKYL PHENOXY POLY(ETHYLENEOXY)ETHANOL IN FUEL OIL TO PREVENT COAL PARTICLES FROM FREEZING TOGETHER

Roger W. Kugel, Warrenville, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 8, 1979, Ser. No. 18,541
Int. Cl.[3] C10L *9/00*
U.S. Cl. 44—6 3 Claims

1. A method for treating coal particles having surface moisture to reduce the cohesive strength of such coal particles when frozen which comprises spraying the coal particles prior of freezing with an effective amount of a hydrocarbon liquid solution of a nonionic surfactant having a HLB between 9.5 and 11.0.

3. The method of claim 1 where the nonionic surfactant is dinonyl phenol reacted with 8.8 moles of ethylene oxide.

4,225,318
METHOD OF MAKING HYDROCARBON COMPOSITION

Hank J. Wrigley, Jr., 2000 Reservoir Rd., Apt. 107 Warren House, Little Rock, Ark. 72207

Filed May 11, 1978, Ser. No. 904,797
Int. Cl.[3] C10L *11/06, 7/02*
U.S. Cl. 44—40 3 Claims

1. The method of forming a fire starting composition and packaging same comprising the steps of:

(a) forming a substantially liquid-free gel, gel-foam or foam through mechanical agitation of a resin-solvent mixture and a surfactant water mixture;

(b) adding to the stable gel, gel-foam or foam a minor amount of acid to promote solidification and a major portion of liquid hydrocarbon; and

(c) injecting said flowable resulting mixture into a package having substantially gas impermeable walls with an amount of combustion supporting gas to comprise at least 15% of the volume of said package and allowing said flowable mixture to solidify after being sealed in said package.

4,225,319
ADSORBENT-TREATED CAT CRACKED GASOLINE IN MOTOR FUELS

Stephen P. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

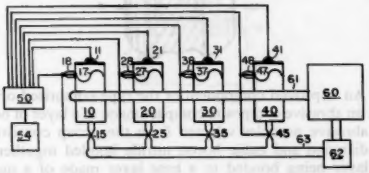
Filed Jul. 5, 1978, Ser. No. 922,257
Int. Cl.[2] C10L *1/22*
U.S. Cl. 44—72 12 Claims

1. A method for suppressing carburetor deposit formation using a fuel composition containing untreated cat cracked gasoline in an internal combustion engine, said method comprising blending adsorbent-treated cat cracked gasoline with the composition.

4,225,320
INTERSTITIAL HYDROGEN STORAGE SYSTEM

Harold A. Gell, 13720 Lockdale Rd., Silver Spring, Md. 20906

Filed Jul. 19, 1979, Ser. No. 59,111
Int. Cl.[3] F17D *1/04*
U.S. Cl. 48—191 13 Claims



1. An interstitial hydrogen fuel system, comprising:

a metal for interstitially storing hydrogen as a metal hydride;

a plurality of gas tight containers containing said metal hydride;

a hydrogen manifold;

a valve means for each of said gas tight containers operatively connected for coupling said gas tight containers to said hydrogen manifold, pressure transducers operatively connected for sensing the gas pressures in said containers, and

control means connected to said valve means said control means including logic means for producing a control signal for opening each of said valves in a mutually exclusive manner as a function of pressure in said containers as sensed by said pressure transducers.

4,225,321
HEAT SET AND DESTRETCHED POLYESTER BACKING MATERIAL IN COATED ABRASIVE MANUFACTURE

Henry J. Swiatek, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 654,328, Feb. 2, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 868,235
Int. Cl.[2] B24D *11/02*
U.S. Cl. 51—295 4 Claims

1. A coated abrasive product incorporating the backing material provided with a cloth finish including fill and front fill coats containing thermosetting resin, said product having

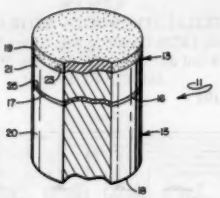
successive maker, abrasive and size coats over said front fill coat, said maker and size coats containing thermosetting resin, and said product being cured and able to withstand being doubled upon itself across the warp, abrasive side compressed, without shattering, and without being torn readily across the warp manually, in the crease produced during such doubling.

4,225,322

COMPOSITE COMPACT COMPONENTS FABRICATED WITH HIGH TEMPERATURE BRAZING FILLER METAL AND METHOD FOR MAKING SAME

Friedel S. Knemeyer, Columbus, Ohio, assignor to General Electric Company, Worthington, Ohio

Filed Jan. 10, 1978, Ser. No. 868,357
Int. Cl.[2] E21B 9/36
U.S. Cl. 51—295 **7 Claims**



1. An improved component of the type comprised of:

A. an abrasive composite compact made of a layer of bonded abrasive particles selected from the group consisting of diamond and cubic boron nitride bonded together, said layer being bonded to a base layer made of a material selected from the group consisting of cemented metal carbide selected from the group consisting of tungsten carbide, titanium carbide and tantalum carbide wherein the material providing the metal bond is selected from the group consisting of cobalt, nickel, iron and mixtures thereof; an elemental metal which forms a stable nitride or boride; and a metal alloy which forms a stable nitride or boride;

B. which composite compact is bonded to a substrate made of a material selected from the same group used for the base layer;

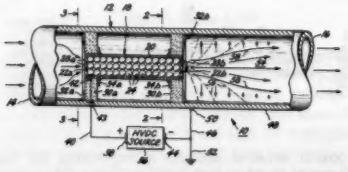
C. by a layer of brazing filler metal disposed between said abrasive compact and said substrate; wherein, the improvement comprises those components in which the brazing filler metal has a liquidus substantially above 700° C. and the thermal degradation temperature of the layer of bonded abrasive particles.

4,225,323

IONIZATION EFFECTED REMOVAL OF ALKALI COMPOSITION FROM A HOT GAS

Andrew S. Zarchy, Ballston Lake, and Shiro G. Kimura, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 31, 1979, Ser. No. 44,314
Int. Cl.[2] B03C 1/00
U.S. Cl. 55—11 **8 Claims**



1. A process for removing at least a portion of the amount of an alkali metal present in a gaseous mixture including an ionizable vapor composition containing said alkali metal in chemically combined or uncombined form, comprising

(a) providing a flow-through network defining a plurality of holes extending therethrough, a portion of a continuous or discontinuous metalliferous surface bordering at least a portion of each hole, said metalliferous surface having a work function of at least 5.3 electron-volts for ionizing alkali metal atoms,

(b) heating said metalliferous surface to a temperature at least equal to the minimum temperature thereof at which, when atoms of said alkali metal are striking said metalliferous surface and equilibrium is established thereon, the ratio n_i/n_a is at least 9:1 where n_i and n_a are the number of ions and number of atoms, respectively, and said alkali metal being emitted from said surface,

(c) while maintaining said metalliferous surface at said temperature, conducting a flow of said gaseous mixture through at least a substantial fraction of the surface-bordered holes and in intimate contact with said metalliferous surface,

the ratio of the volumetric flow rate of said flow to the area of said metalliferous surface being sufficiently low such that a substantial portion of said ionizable composition is catalytically ionized to form a second gaseous mixture including positive ions selected from the group consisting of said alkali metal and positive ions including said alkali metal as a moiety thereof,

(d) developing an electric field within an ion-collection zone having an electrically conductive ion-collection surface, said field having lines of force extending transversely through a gas flow path within said zone to said ion collection surface, said electric field having a potential of at least +200 volts,

(e) prior to substantial neutralization of the ions within said second mixture and while maintaining said electric field, passing said second mixture along said flow path and through said lines of force to deposit and neutralize at least a portion of said ions on said ion-collection surface, and

(f) while passing said second mixture along said flow path, maintaining said collection surface at a temperature sufficiently low such that a substantial portion of the deposited and neutralized ions are retained on said ion-collection surface as a condensed phase,

wherein the maximum potential of said electrical field is of sufficiently low voltage such that the gaseous mixture does not undergo either glow discharge or breakdown discharge.

4,225,324

METHOD OF SEPARATING GAS MIXTURES PARTICULARLY FOR THE ENRICHMENT OF A GAS MIXTURE IN A COMPONENT CONTAINING URANIUM 235

Hans O. E. Gazda, Anton-Krieger-Gasse 155, A-1238 Vienna, Austria

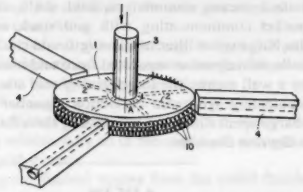
Filed Mar. 23, 1978, Ser. No. 889,395
Claims priority, application Austria, Mar. 24, 1977, 2076/77
Int. Cl.[2] B01D 59/20
U.S. Cl. 55—17 **2 Claims**

1. A process for at least partial separation of a light component from a heavy component in a gas mixture, comprising the steps of:

radially accelerating said gas mixture in a disk centrifuge having a periphery at which a radial passage in said disk opens and from which the gas mixture emerges and inducing turbulent flow along said periphery having a substantially uniform eddy-current formation with a substantially smaller degree of turbulence than the potential flow outwardly thereof in a manner such that a boundary layer enriched in said light component is formed along said periphery; and

recovering gas enriched in said light component from said

boundary layer by inserting into said boundary layer, proximal to said periphery but externally of said disk and



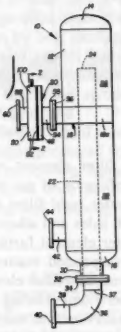
opening toward said periphery, a plurality of conduits and withdrawing the gas enriched in the light component from said conduits.

4,225,325

STEAM SEPARATOR WITH VARIABLY SIZED RECTANGULAR INLET OPENING

Robert J. Diehl, Vivian, and William L. Godare, Shreveport, both of La., assignors to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Jun. 14, 1979, Ser. No. 48,339
Int. Cl.³ B04C 5/04
U.S. Cl. 55—191 **13 Claims**



1. In a centrifugal action cyclone steam separator having a separator vessel with a cylindrical inside surface, the improvement comprising:

an inlet conduit connected with the vessel to deliver incoming fluid containing water and steam thereto for separation of the water and steam in the vessel, said inlet conduit having a substantially rectangular cross-section and an outer side which connects with said inside surface of the vessel;

a variably sized rectangular opening in said inlet conduit having one side on the outer side of the inlet conduit to direct fluid passing through the opening along said outer side; and

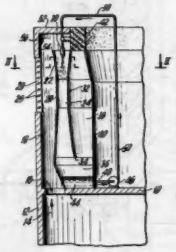
means for varying the size of said opening in a manner to continuously maintain the rectangular shape thereof and to continuously maintain said one side of the opening on the outer side of the inlet conduit, whereby fluid passing through said opening is directed along said outer side of the inlet conduit and along said inside surface of the vessel at all sizes of opening, said means including at least two adjacent movable sides defining said rectangular opening and a single adjusting means for moving the two movable sides simultaneously.

4,225,326

DEVICE FOR SEPARATING IMPURITIES FROM GASES BY MEANS OF A WASHING LIQUID

Walter Hummel, Karlsruhe; Gregor Klinke, Ettlingen, both of Fed. Rep. of Germany, and Alberto Prosperi, Carnate, Italy, assignors to Wiegand Karlsruhe GmbH, Ettlingen, Fed. Rep. of Germany

Filed Jul. 17, 1975, Ser. No. 596,817
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1974, 2434664
Int. Cl.² B01D 47/06, 46/42
U.S. Cl. 55—257 R **7 Claims**



1. A device for separating impurities from gases, comprising:

three inter-connected chambers, a suction chamber, a mixing chamber and a separating chamber, wherein the outer wall of said mixing chamber is the inner wall of said suction chamber and the inner wall of said mixing chamber is the outer wall of said separating chamber,

an inlet positioned in said suction chamber for conveying contaminated gases thereto,

an inlet in the upper portion of said mixing chamber outer wall connecting said suction and mixing chambers for conveying contaminated gases moving through said suction chamber downwardly into said mixing chamber,

a plurality of spray nozzles mounted within the upper portion of said mixing chamber below said inlet for downwardly spraying washing liquid which removes impurities in the contaminated gases as they flow downwardly through said mixing chamber,

a liquid collection chamber at the bottom of and directly open to said mixing and separating chambers for collecting used washing liquids and impurities from the gases,

an outlet in said inner wall of said mixing chamber above said collection chamber for conveying the washed gases from said mixing chamber upwardly into said separating chamber,

and a separator in said separating chamber for removing droplets of liquid from the washed gases before the washed gases pass into the surrounding atmosphere,

said suction chamber having an outer wall with an exhaust opening at about the level of said nozzles which leads to the atmosphere, and means connected to said outer wall adapted to open and close said opening, wherein said means is closed during normal operation of the device to prevent contaminated gases from being exhausted to atmosphere, and wherein said means is opened when the device is not operating properly so the contaminated gases can be passed to atmosphere without passing through the device.

4,225,327
FILTER FOR PURIFICATION OF GASES

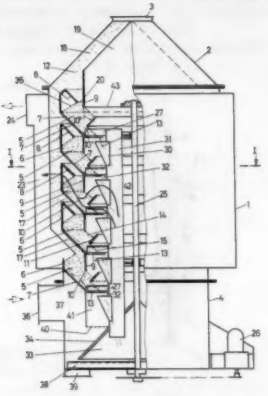
Friedrich Sgaslik, Regensburg, and Detlef Nalaskowski, Bayreuth, both of Fed. Rep. of Germany, assignors to Lufttechnik Bayreuth Ruskamp GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 784,918, Apr. 5, 1977, abandoned. This application Oct. 26, 1978, Ser. No. 954,992

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616250; Feb. 5, 1977, 2704854

Int. Cl.[2] **B01D** *50/00, 23/16, 33/00*

U.S. Cl. 55—324 **17 Claims**



13. Apparatus for the purification of gases comprising:

(a) a plurality of annular filter chambers concentrically arranged with respect to a common vertical axis one above the other, said filter chambers each having inner and outer annular wall means and each containing a filter medium;

(b) an inner gas chamber surrounded by said filter chambers, and an outer gas collection chamber surrounding said filter chambers;

(c) a storage chamber for storing fresh filter medium, a filter medium inlet means at the top of each filter chamber, channel means for establishing direct communication between said storage chamber and each filter medium inlet means for downward flow of fresh filter medium directly into each said filter chamber from said storage chamber, and an annular opening at the lower part of each inner wall means defining a spent filter medium outlet for the downward flow of spent filter medium out of each filter chamber;

(d) said annular opening being in communication with said inner gas chamber, and each filter chamber having an upper gas outlet in communication with said outer gas chamber to provide a path of flow of gas from said inner chamber through each filter chamber via said annular opening and thence to said outer chamber via said upper gas outlet substantially countercurrent to the flow of filter medium;

(e) a horizontally disposed annular wall means adjacent and below each annular opening and extending into the interior of said inner gas chamber, the upper surface of said annular wall means being adapted to support thereon a deposit of spent filter medium discharged from each filter chamber via said annular opening;

(f) a rotatable shaft within said inner gas chamber, means for rotating said shaft, a plurality of scrapers mounted on said shaft, at least one of said scrapers being located at each annular opening and above said upper surface, and a plurality of collection pockets mounted on said shaft, at least one of said pockets being located below each said annular wall means, said scrapers being operable, when said shaft is rotated, to move across said upper surface of said annular wall means and thereby push said spent filter medium deposited thereon off said annular wall means and into said pockets; and

(g) stack means mounted on said shaft, each collection pocket communicating with said stack means so as to discharge spent filter medium into said stack means, and a collection chamber separated from said inner gas chamber by a wall means, the lower end of said stack means communicating with said collection chamber so as to discharge spent filter medium passing therethrough into said collection chamber.

4,225,328
EXCHANGEABLE FILTER ELEMENT

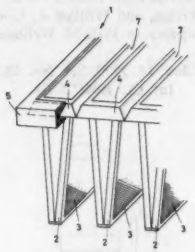
Hans-Henrich Stiehl, Berlin, Fed. Rep. of Germany, assignor to Delbag-Luftfilter GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 23, 1978, Ser. No. 953,467

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1977, 2751640

Int. Cl.[2] **B01D** *46/02*

U.S. Cl. 55—378 **7 Claims**



1. An exchangeable filter element especially for nuclear installations for the purification of gas streams which contain toxic or radioactive matter, said filter element comprising a rigid frame closed on all sides and adapted to be inserted into a filter housing, said filter element further comprising a filter element for removing suspended matter; means sealing said filter element in said frame, said filter element being removable from said frame, said filter element being reduced in volume by means of pressure after said removal, said filter element further comprising a plurality of individual, V-shaped filter pockets which are arranged side by side, said filter pockets having flanges surrounding the open sides of these filter pockets and being removable, said flanges of all V-shaped pockets being gas tight and enclosed by a common encirculating mounting frame, which mounting frame consists of elastic breakable material, the encirculating edge of which mounting frame being tightly insertable in the housing which serves to receive the filter and where the filter pockets are freely suspended.

4,225,329
NATURAL GAS LIQUEFACTION WITH NITROGEN REJECTION STABILIZATION

Dunn M. Bailey, Bartlesville, Okla., and Ernest A. Harper, deceased, late of Bartlesville, Okla. (by Dunn M. Bailey, acting legal representative), assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 802,083, May 31, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,572

Int. Cl.[2] **F25J** *3/02*

U.S. Cl. 62—24 **4 Claims**

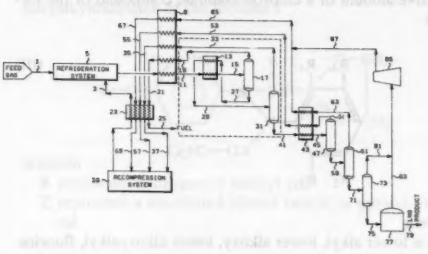
1. In a cascade refrigeration system for liquid natural gas containing at least 1.5 percent nitrogen in which the feed is cooled by refrigeration and heat exchange with intial flashing of liquid to a pressure sufficient to produce a flashed vapor

stream containing substantially all of the contained nitrogen and a flashed liquid stream and with recycled vapors used for heat exchange, recompressed, and combined with the incoming feed, a method for stabilizing the nitrogen content of the recycled vapors comprising:

(a) passing the natural gas containing at least 1.5 percent nitrogen through an indirect heat exchanger for reboiling the kettle of a nitrogen stripping column;

(b) initially flashing the effluent natural gas from (a) to a pressure sufficient to produce a flashed vapor stream containing substantially all of the contained nitrogen and a flashed liquid stream;

(c) subjecting the flashed vapors from the initial flashing of



liquid to a stripping operation in a nitrogen stripping column to remove at least part of the nitrogen content;

(d) recovering refrigeration from the vapor stripped from said flashed vapors by heat exchange within the system;

(e) yielding the stripped vapors from the system;

(f) returning as a liquid the stream from which nitrogen has been stripped to the liquid stream produced from the initial flashing of liquid; and

(g) further flashing flashed liquid from the initial flashing of natural gas with liquid produced from this flashing operation used in part as cooling liquid for indirect heat exchange with the vapors from the initial flashing and in part for further cooling and flashing to produce a liquified natural gas.

4,225,330

PROCESS FOR PRODUCING GLASS MEMBER

Hideo Kakuzen; Shiro Kurosaki, and Yuichi Usui, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jul. 21, 1978, Ser. No. 926,774

Claims priority, application Japan, Jul. 27, 1977, 52/90619; Aug. 26, 1977, 52/102890; Aug. 29, 1977, 52/104097; Nov. 28, 1977, 52/143081

Int. Cl.[2] C03B *19/06;* **C03C** *3/04, 3/12, 21/00*

U.S. Cl. 65—18 **30 Claims**

1. A process for producing a glass member which comprises

(1) subjecting a silicon, boron, phosphorus or aluminum compound or both a silicon, boron, phosphorus or aluminum compound and a dopant compound to vapor phase reaction to form a fine powder of fused silica, borate, phosphate or alumina or doped fused silica, borate, phosphate or alumina;

(2) partially sintering the powder in an inert gas, an anhydrous oxygen gas, chlorine gas, fluorine gas or in a vacuum to form a porous glass body;

(3) immersing the porous glass body in a solution containing a dopant compound;

(4) depositing the dopant command on the surfaces of the pores in the porous glass body;

(5) drying the porous glass body in a vacuum, and then

(6) collapsing the pores of the porous glass body in a vacuum, or in an oxygen or inert gas atmosphere free of moisture to produce the glass member.

4,225,331

METHOD OF AND APPARATUS FOR PRODUCING GLASS VESSELS

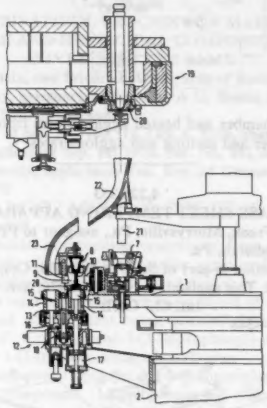
Hans-Joachim Bittner; Heribert Scherer, and Hans Hanses, all of Hagen, Fed. Rep. of Germany, assignors to H. Putsch GmbH & Company, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,441

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816649

Int. Cl.[3] C03B *7/16, 11/02, 19/00*

U.S. Cl. 65—48 **9 Claims**



1. A method of producing a glass vessel consisting of a receptacle part and a stand part, in which the receptacle part is produced on a rotary table in a pressing operation and subsequently the stand part is formed by an injection device and in so doing is united with the receptacle part, characterised in that a mould for the receptacle part is charged in free drop fall by a glass feeder, and in that the receptacle part, after pressing and cooling, is transposed onto an injection mould for the stand part, which injection mould is integrated into the rotary table for the receptacle part, and in that the injection device for the stand part is charged from the glass feeder by way of a drop guide channel.

4,225,332

ENERGY EFFICIENT POLLUTION ABATING GLASS MANUFACTURING PROCESS WITH EXTERNAL RECOVERY OF HEAT FROM FURNACE FLUE GASES

Quey T. Tsay, Pickerington, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 14, 1978, Ser. No. 933,361

Int. Cl.[3] C03B *5/16*

U.S. Cl. 65—134 **6 Claims**

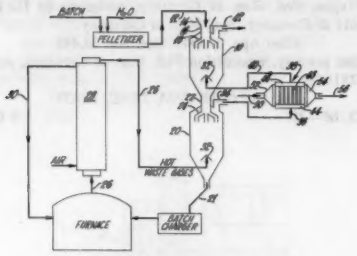
1. A method of manufacturing glass comprising:

providing a first and second chamber each adapted to contain a bed of glass batch agglomerates,

introducing glass batch agglomerates to said first chamber and introducing glass batch agglomerates from said first chamber to said second chamber, said batch agglomerates being formulated to produce a glass containing less than 3 percent by weight of alkaline metal oxides, and

introducing flue gases to said second chamber so as to heat said agglomerates therein, withdrawing said flue gases from said second chamber, recovering heat from said withdrawn flue gases in a heat exchanger and introducing

said latter flue gases to said first chamber so as to heat said agglomerates therein, withdrawing flue gases from said



first chamber and heated agglomerates from said second chamber and melting said agglomerates.

4,225,333

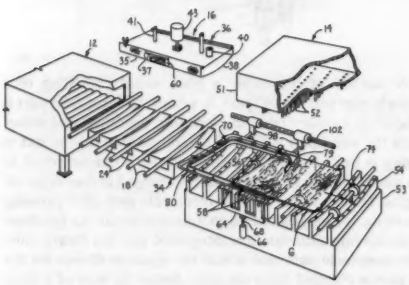
GLASS SHEET TEMPERING APPARATUS

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 954,694, Oct. 25, 1978, abandoned. This application Nov. 15, 1978, Ser. No. 961,079

Int. Cl.[2] **C03B** *27/00*

U.S. Cl. 65—348 **7 Claims**



1. Apparatus for tempering a shaped glass sheet having a generally convex major surface and a generally concave opposite major surface, comprising: a first array of spaced apart pipe nozzles directed toward a curved sheet receiving space and in communication with a source of pressurized tempering medium, each of the pipe nozzles in the first array terminating in a curved plane substantially parallel to the concave major surface of the glass sheet, the first array providing relatively unimpeded escape for spent tempering medium from the vicinity of the first array; a second array of nozzles directed toward and on the opposite side of the curved sheet receiving space from the first array and in communication with a source of pressurized tempering medium, each of the nozzles of the second array comprising orifices extending through a solid member facing the glass sheet receiving space, each of the nozzles in the second array terminating in a curved plane substantially parallel to the convex major surface of the glass sheet, the solid members of the second array providing extended surfaces among the orifices adapted to impede the escape of spent tempering medium from the vicinity of the second array relative to the escape from the first array, whereby tempering conditions on both sides of the curved sheet receiving space are substantially equalized; and means for conveying a heated shaped glass sheet into the sheet receiving space.

4,225,334

PHENYLGLYOXYLONITRILE-2-OXIME-CYANOMETHYL ETHER AS A CROP SAFENER

Henry Martin, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

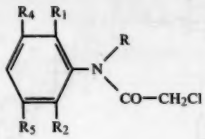
Division of Ser. No. 772,700, Feb. 28, 1977, Pat. No. 4,152,137, which is a continuation-in-part of Ser. No. 717,792, Aug. 25, 1976, Pat. No. 4,070,389. This application Mar. 26, 1979, Ser. No. 23,794

Claims priority, application Switzerland, Sep. 4, 1975, 11458/75

Int. Cl.[2] **A01N** *9/00*

U.S. Cl. 71—88 **9 Claims**

1. A herbicidal composition comprising (1) a herbicidally effective amount of a chloroacetanilide compound of the formula



(III)

wherein

R_1 is lower alkyl, lower alkoxy, lower alkoxyalkyl, fluorine or chlorine and

R_2, R_4 and R_5 independently of one another are hydrogen, lower alkyl, lower alkoxy, lower alkoxyalkyl or chlorine and

R is 1,3-dioxolan-2-yl-alkyl, 1,3-dioxolan-5-yl-alkyl, 1,3-dioxan-2-yl-alkyl, furanylmethyl or tetrahydrofuranylmethyl and (2) phenylglyoxylonitrile-2-oxime-cyanomethyl ether in sufficient amount to prevent injury to crops treated with said herbicide composition.

4,225,335

DIOXOLANE SUBSTITUTED ACETANILIDS

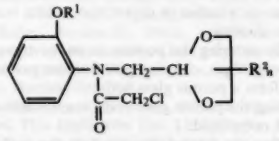
Deborah L. Coppi, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 21, 1979, Ser. No. 50,835

Int. Cl.[3] **C07D** *13/04;* **A01N** *9/20*

U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



wherein R^1 and R^2 are each independently methyl, ethyl or propyl and n is the integer 1 or 2.

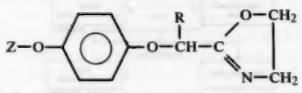
9. A herbicidal composition comprising an inert carrier and as an essential active ingredient, in a quantity toxic to weeds, a compound of claim **1**.

4,225,336
PHENOXYALKYLOXAZOLINES, AS SELECTIVE HERBICIDES IN CEREALS

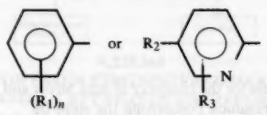
Werner Fory, Basel; Hermann Rempfler, Ettingen, both of Switzerland; Georg Pissiotas, Lorrach, Fed. Rep. of Germany; Otto Rohr, Therwil, and Beat Bohner, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 974,195, Dec. 28, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 62,191
Claims priority, application Switzerland, Jan. 2, 1978, 2/78
Int. Cl.[2] A01N *9/28*
U.S. Cl. 71—88 **4 Claims**

1. A method for controlling weeds in crops of cereals which comprises applying a herbicidally effective amount of a phenoxyalkyloxazoline of the formula I



wherein
R represents hydrogen or methyl and
Z represents a substituted phenyl radical or pyrid-2-yl radical



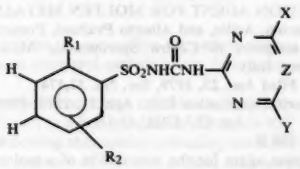
wherein
R_1 represents halogen, trifluoromethyl, cyano or nitro,
R_2 represents hydrogen, halogen or cyano,
R_3 represents halogen, trifluoromethyl or cyano, and
n is 1 or 2;
to an area where cereal crop is growing or expected to grow.

4,225,337
HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 937,552, Sep. 1, 1978, abandoned. This application Oct. 27, 1978, Ser. No. 955,504
Int. Cl.[3] A01N *43/66*; C07D *251/42*
U.S. Cl. 71—93 **12 Claims**

1. A compound or an agriculturally acceptable salt thereof which has the formula:



(I)

wherein
R_1 is H, Cl, Br, F, CH_3, OCH_3 or NO_2;
R_2 is —NCO,

R_3 is alkyl of 1–4 carbon atoms;
R_4 is H or CH_3;
R_5 is H, alkyl of 1–4 carbon atoms or methoxy;
X is methyl, methoxy or ethoxy;
Y is methyl or methoxy; and
Z is N;
provided that
(a) when R_2 is ortho to the sulfonylureido group, then R_1 must be hydrogen and R_2 cannot be —NCO;
(b) when R_5 is methoxy, R_4 is methyl; and
(c) when R_2 is —NCO; the compound cannot be a salt.

4,225,338
UREA DERIVATIVES, PROCESS FOR MAKING THE SAME AND HERBICIDAL COMPOSITION CONTAINING THE SAME

Ludwig Nüsslein, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering A G, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 730,715, Oct. 8, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 941,302
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2558078
Int. Cl.[3] A01N *47/30*; C07C *127/00*
U.S. Cl. 71—120 **5 Claims**

1. A herbicidal composition comprising from about 10 to 80% by weight of a herbicidally active agent, and about 90 to 20% by weight of a relatively inert liquid or solid carrier material or a mixture of relatively inert liquid or solid carrier materials, said active agent being selected from the group consisting of 1-cyclopropyl-3-(3-fluorophenyl)-urea and 1-cyclopropyl-3-(3-trifluoromethylphenyl)-urea.

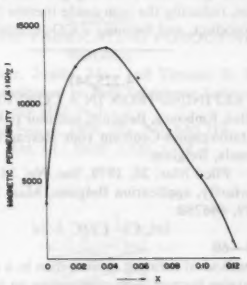
4. The compound 1-cyclopropyl-3-(3-fluorophenyl)-urea.

5. The compound 1-cyclopropyl-3-(3-trifluoro-methylphenyl)-urea.

4,225,339
AMORPHOUS ALLOY OF HIGH MAGNETIC PERMEABILITY

Koichiro Inomata, Yokohama; Senji Shimanuki, Kawasaki, and Michio Hasegawa, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 15, 1978, Ser. No. 969,960
Claims priority, application Japan, Dec. 28, 1977, 52-157274; Feb. 13, 1978, 53-14167; Feb. 13, 1978, 53-14168
Int. Cl.[2] C22C *38/10, 38/12*
U.S. Cl. 75—122 **9 Claims**



1. An amorphous alloy of high magnetic permeability, having the formula:

$$(T_yNb_xA_{1-x-y})_{100-z}X_z$$

wherein,
"A" is at least one element selected from the group consisting of 0.5 to 10 atomic % of V, Ta, Ti, Zr, Cr, Mo, W and

0.5 to 30 atomic % of Ni, based on the total amount of T, Nb and A,

"T" is at least one element selected from the group consisting of Fe and Co,

"X" is B or B+Si, the amount of Si being at most 25 atomic % based on the total amount of the alloy,

"x" ranges between 0.005 and 0.1,

"y" ranges between 0.5 and 0.99, and

"z" ranges between 15 and 35, with the proviso that $0.005 \leqq 1-x-y \leqq 0.4$.

4,225,340

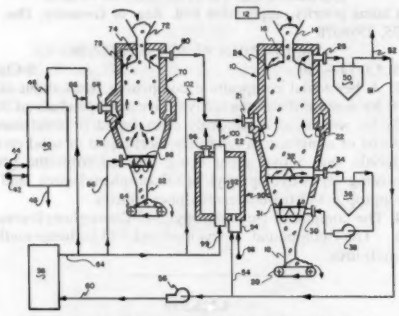
METHOD FOR THE DIRECT REDUCTION OF IRON USING GAS FROM COAL

Donald Beggs, Charlotte, N.C., and John C. Scarlett, Toledo, Ohio, assignors to Midrex Corporation, Charlotte, N.C.

Continuation-in-part of Ser. No. 933,690, Aug. 15, 1978. This application Jun. 12, 1979, Ser. No. 47,680

Int. Cl.³ C21B *13/02*

U.S. Cl. 75—35 **8 Claims**



1. A method for reducing iron oxide comprising:

a. gasifying fossil fuel to produce a hot gasifier gas;

b. tempering said hot gasifier gas with clean, cool spent top gas from a direct reduction furnace to form a hot gas mixture;

c. reacting said hot gas mixture with carbon and a sulfur acceptor to upgrade the quality of the mixture, to desulfurize the mixture, and to form a hot reducing gas; and

d. introducing the hot reducing gas into a direct reduction furnace, reducing the iron oxide therein to a highly metallized product, and forming a CO_2-containing top gas.

4,225,341

REFINING IRON IN A CONVERTER

Paul E. Nilles, Embourg, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Mar. 26, 1979, Ser. No. 24,072

Claims priority, application Belgium, Mar. 29, 1978, 865462; Feb. 2, 1979, 646750

Int. Cl.² C21C *5/34*

U.S. Cl. 75—60 **5 Claims**

1. In a method of refining molten iron in a converter whose bottom contains tuyeres each comprising an inner duct and an outer duct, the method comprising the sequential steps of blowing an oxidising gas into the molten iron through the inner ducts of the tuyeres while blowing a gaseous hydrocarbon as a protective fluid through the outer ducts, tipping the converter in one direction into a sampling position, and tipping the converter in the opposite direction into an emptying position, the improvement comprising blowing a gas consisting essentially of CO_2 through at least the outer duct of each tuyere throughout the tipping of the converter from the sampling position to the emptying position.

4,225,342

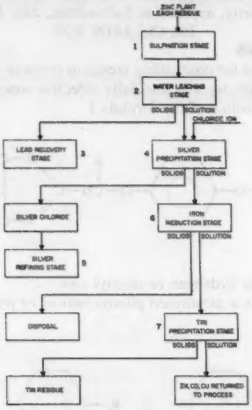
TREATMENT OF ZINC PLANT LEACH RESIDUES FOR RECOVERY OF THE CONTAINED METAL VALUES

George M. Freeman, Montreal, and David E. Nightingale, Timmins, both of Canada, assignors to Texasgulf Inc., Stamford, Conn.

Filed Sep. 21, 1979, Ser. No. 77,714

Int. Cl.³ C22B *11/06, 25/04, 13/04*

U.S. Cl. 75—109 **31 Claims**



1. A process for the recovery of lead, silver and tin from zinc plant leach residues, comprising the steps of:

(a) sulphating the zinc plant leach residue to form a dry cake wherein the bulk of the metal values contained therein are in their sulphate form;

(b) water leaching the silver and tin from the sulphated cake;

(c) separating the insoluble lead residue from the water leach solution;

(d) recovering the silver from the leach solution by precipitation;

(e) treating the leach solution to reduce the iron content; and

(f) recovering the tin contained in the residual leach solution by precipitation.

4,225,343

ADDITION AGENT FOR MOLTEN METALS

Giovanni Guarino, Acilia, and Alberto Praitoni, Pomezia, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

Filed Apr. 23, 1979, Ser. No. 32,474

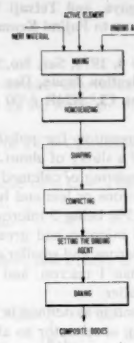
Claims priority, application Italy, Apr. 21, 1978, 49007 A/78

Int. Cl.² C22C *33/08*

U.S. Cl. 75—130 R **4 Claims**

1. An addition agent for the inoculation of a molten metal bath, consisting essentially of more than 50% but not more than 90% by weight of a metal selected from the group consisting of alkali metal and alkaline earth metal, said metal having a particle size greater than 3 mm. but not more than 10 mm., 5 to 49% by weight of a porous material having a particle size greater than 3 mm. but not more than 20 mm., said porous material being selected from the group consisting of semi-coke, coke breeze, coke and graphite, and at least 1% but less than 10% by weight of a binder which secures said metal particles

and said porous material particles together in a briquette, said metal and said porous material each being in the form of dis-



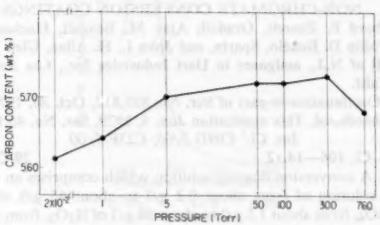
crete particles which are separate from each other but which are held together by said binder.

4,225,344

PROCESS FOR PRODUCING SINTERED HARD METALS AND AN APPARATUS THEREFOR

Naoji Fujimori; Masaya Miyake; Takaharu Yamamoto, and Akio Hara, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Jul. 17, 1978, Ser. No. 925,697
Claims priority, application Japan, Jul. 17, 1977, 52/85923
Int. Cl.[3] B22F *3/00*; C22C *1/05*
U.S. Cl. 75—203 **6 Claims**



1. A process for controlling the carbon content of cemented carbides or cemented carbide alloys during sintering comprising:

(a) heating a cemented carbide or cemented carbide alloy compact to a first temperature between 800° and 1200° C. in a flowing atmosphere consisting essentially of hydrogen at a pressure of 300 torr or less, said temperature being sufficient to cause deoxidation of the compact but below the temperature which results in appreciable decarburization by hydrogen;

(b) removing said hydrogen atmosphere at said first temperature; and

(c) continuing to heat the powder body from said first temperature to the sintering temperature of the compact in a flowing atmosphere consisting essentially of carbon monoxide gas at reduced pressure.

4,225,345

PROCESS FOR FORMING METAL PARTS WITH LESS THAN 1 PERCENT CARBON CONTENT

James M. Adee, 4277 Layla Way, San Diego, Calif. 92154, and John A. MacPherson, 185 E. L St., Chula Vista, Calif. 92011

Filed Aug. 8, 1978, Ser. No. 931,966
Int. Cl.[2] B22F *3/00*
U.S. Cl. 75—211 **9 Claims**

TABLE I.

1. FORM A MIXTURE OF:	WEIGHT %
A) POWDERED STEEL 17-4PH-325 MESH	85.90
B) POLYSTYRENE	6.25
C) POLYETHYLENE	0.78
D) HUNT WESSON OIL	6.25
E) STEARIC ACID	0.78

2. INJECTION MOLD MIXTURE OF STEP 1.

3. PLACE MOLDED PART OF STEP 2 IN BATH OF ETHYL ALCOHOL TO REMOVE PLASTICIZERS.

4. PLACE MOLDED PART OF STEP 3 IN BATH OF TRICHLOROETHANE 1,1,1 TO REMOVE POLYSTYRENE.

5. SINTER PART OF STEP 4.

1. A process for forming a metal part having a carbon content of less than 1% comprised of the steps of:

forming a substantially uniform mixture comprised of a powdered metal, a plasticizer, at least one first binder which is selectively extractable from said mixture without sintering and at least one further binder which is not removable by said selective extraction,

the total quantities of said binders and plasticizer being selected to form a readily moldable mixture and the quantity of binder not removable by said selective extraction being sufficient to maintain the shape of the molded mixture but less than that forming a carbon content of 1.0% after sintering;

shaping said mixture into said part;

removing said plasticizer and extractable binder from said part without sintering to form a porous part having a reduced binder content which, when decomposed by sintering, leaves said part with less than said predetermined carbon content; and

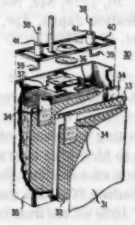
heating said porous part at a temperature and in an atmosphere to decompose and remove residual binder to a carbon content less than 1% and to sinter said powdered metal into a shaped metal part.

4,225,346

PROCESS FOR FABRICATING POROUS NICKEL BODIES

Conrad D. Helliker, Joplin, Mo., and Thomas D. O'Sullivan, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1978, Ser. No. 940,714
Int. Cl.[3] B22F *1/00, 3/10*
U.S. Cl. 75—211 **16 Claims**



1. A process for making porous nickel bodies by sintering a

gel mixture characterized in that prior to sintering, the gel mixture is made by mixing together an aqueous solution of modified cellulose ether which gels on heating and a metal powder consisting essentially of nickel and heating this mixture to a temperature between 50 and 120 degrees C. in order to achieve gelling.

4,225,347

CARBON CARRIER SUITABLE FOR USE IN ELECTROTHERMAL REDUCTION PROCESSES, AND PROCESS FOR MAKING IT

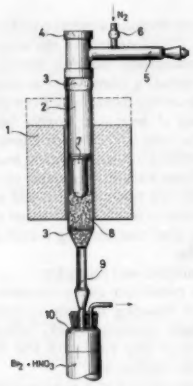
Herbert Diskowski; Hans Ebert; Winfried Kern, all of Erftstadt; Hans Rabowsky; Bernhard Schäfgen, both of Hürth, and Joachim Stendel, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 27, 1979, Ser. No. 24,417

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814106

Int. Cl.[2] C22B *9/10, 1/08*

U.S. Cl. 75—257 **11 Claims**



1. Carbon carrier of improved reactivity suitable for use in slag-forming electrothermal reduction processes, the carbon carrier containing 5 to 80 weight % of slag deriving from the particular reduction process in which the carbon carrier is to be used.

4,225,348

LIME BEARING AGENT FOR USE IN REFINING OF FERROUS MELT

Ryoichi Yoshimura, Yokohama; Munetaka Honda, Nyuzenmachi, and Norio Hirokawa, Chichibu, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,478

Claims priority, application Japan, Apr. 4, 1978, 53-38781

Int. Cl.[2] C22B *9/10*

U.S. Cl. 75—257 **6 Claims**

1. A lime bearing granular agent for use in refining of a ferrous melt, said agent having a good resistance against slaking, each of the granules having a granular form solidified from molten drops, and consisting essentially of from 15 to 100% of calcium oxide, from 0.1 to 85% of at least one member selected from the group consisting of a calcium fluoride and an aluminum oxide; and not exceeding 10% of a magnesium oxide, 10% of a silicon oxide, and 10% of an iron oxide or oxides, said magnesium oxide, silicon oxide and iron oxides being derived from the raw materials of lime bearing refining agents or the refractories of a melting furnace.

4,225,349

COMPOSITIONS FOR POLISHING SYNTHETIC RESIN

Isamu Koshiyama, Nagoya, and Tetsuji Senda, Nishikasugai, both of Japan, assignors to Fujimi Kenmazai Kogyo Co. Ltd., Nishikasugai, Japan

Filed May 4, 1978, Ser. No. 902,989

Claims priority, application Japan, Dec. 27, 1977, 52-158237

Int. Cl.[2] B24B *1/00*

U.S. Cl. 106—3 **36 Claims**

1. An aqueous composition for polishing synthetic resin consisting essentially of a slurry of about 5 to 50% by weight of a polishing agent consisting of calcined boehmite of a particle size of about 20 microns or less and having a particle size distribution of about 5.5% being 3 microns and larger, about 7.0% being less than 3 microns and greater than 2 microns, about 15.0% being 2 microns and smaller dispersed or slurried in water but greater than 1 micron, and about 72.5% being about 1 micron and smaller.

3. A polishing composition as defined in claim 1 or 2, further containing as a polishing accelerator an aluminum compound selected from the group consisting of aluminum nitrate, polyaluminum chloride, aluminum bromide, aluminum sulfate, aluminum iodide, aluminum chloride and aluminum phosphate and mixtures thereof.

4,225,350

NON-CHROMATE CONVERSION COATINGS

John L. H. Allan, Glen Rock; Philip D. Readio, Sparta; Ajay M. Bengali, Hackensack, and Richard F. Zuendt, Oradell, all of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 955,812, Oct. 30, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,161

Int. Cl.[2] C09D *5/08;* **C23F** *7/00*

U.S. Cl. 106—14.12 **21 Claims**

1. A conversion coating solution which comprises an aqueous solution of from about 0.2 g/l to about 45 g/l of free H_2SO_4, from about 1.5 g/l to about 58 g/l of H_2O_2, from about 3 g/l to about 33 g/l of SiO_2 and an effective amount of at least one cationic triarylmethane dye.

4,225,351

NON-CHROMATE CONVERSION COATINGS

Richard F. Zuendt, Oradell; Ajay M. Bengali, Hackensack; Philip D. Readio, Sparta, and John L. H. Allan, Glen Rock, all of N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 955,812, Oct. 30, 1978, abandoned. This application Jun. 4, 1979, Ser. No. 45,162

Int. Cl.[2] C09D *5/08;* **C23F** *7/00*

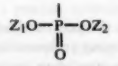
U.S. Cl. 106—14.12 **29 Claims**

1. A conversion coating solution which comprises an aqueous solution of from about 0.2 g/l to about 45 g/l of free H_2SO_4, from about 1.5 g/l to about 58 g/l of H_2O_2, from about 3 g/l to about 33 g/l of SiO_2, from about 0.15 g/l to about 10 g/l of at least one of the organophosphorus compound promoters specified below, and from about 2 g/l to about 20 g/l of at least one secondary promoter selected from the group consisting of ascorbic acid, boric acid, gluconic acid, glycolic acid, tartaric acid and salts of said acids, wherein the organophosphorus compound is one having the general formula:

$$[X(R_1)_m]_n\text{-}[R_2]_p\text{-}[X(R_1)_m]_q,$$

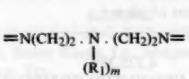
wherein

X is a group of the formula



in which

Z_1 and Z_2 independent from each other are hydrogen, sodium or potassium;
m is either 0 or 1;
p is either 0 or 1;
n+q is either
(a) 1 when P=0, or
(b) equal to the number of available bonds provided by R_2 when p=1;
R_1 is a
(a) C_1–C_4 alkyl or a C_1–C_4 hydroxy-substituted alkyl and p=0; and
(b) C_1–C_4 alkylene or a C_1–C_4 hydroxy-substituted alkylene and p=1;
R_2 is selected from
(a) N≡, m=1
(b) $=N(CH_2)_rN=$, m=1 and r is an integer from 2 to 6



(c)

X m = 1, and

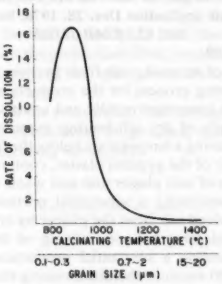
(d) a C_1–C_4 alkylene or a C_1–C_4 hydroxy-substituted alkylene m=0 or 1.

4,225,352

ANTI-CORROSIVE PIGMENT AND ANTI-CORROSIVE AQUEOUS PAINT

Hajime Makino; Wataru Shinoda, and Kazuhiro Yamamura, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Jun. 5, 1978, Ser. No. 912,737
Claims priority, application Japan, Jun. 30, 1977, 52-78898
Int. Cl.[2] C09D *5/08*
U.S. Cl. 106—14.21 **6 Claims**



1. An anti-corrosive pigment having excellent storage characteristics and substantially free from gelation under storage produced by
(a) mixing 57–70% by weight, calculated as Fe_2O_3, of an iron compound selected from the group consisting of Fe_2O_3, Fe_3O_4 and FeOOH with 30–43% by weight, calculated as CaO, of a calcium compound selected from the group consisting of CaO, $CaCO_3$ and $Ca(OH)_2$;
(b) calcining the resultant mixture at a temperature in the range of from 1250° to 1400° C. and sufficient to form an iron oxide-calcium oxide sintered composite containing at least 25% by weight of $2CaO\text{-}Fe_2O_3$ having a crystal grain size of at least about 0.7 to 20 μm and a calcium oxide solubility of less than 1%; and
(c) pulverizing the resultant sintered composite into powder having an average particle size between 0.7 and 7 μm.

4,225,353

REINFORCED SULPHUR-ASPHALT COMPOSITES OF TWO CONTINUOUS PHASES

James J. Beaudoin, and Peter J. Sereda, both of Ottawa, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Continuation-in-part of Ser. No. 729,362, Oct. 10, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,346
Claims priority, application Canada, Oct. 15, 1975, 237678
Int. Cl.[3] C08L *95/00*
U.S. Cl. 106—275 **17 Claims**

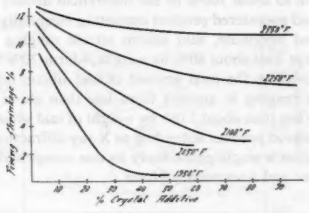
1. A sulfur-bituminous composite binder material consisting essentially of above 60% and up to 75% by weight sulfur and from 25% to below 40% by weight bituminous material, wherein a rigid microporous continuous skeleton of sulfur is surrounded by a continuous bituminous phase and wherein said bituminous material is selected from asphalt, tar and pitch.

4,225,354

CRYSTALLINE ADDITIVE FOR MAGNESIUM ALUMINA SILICATE

V. Durga Nageswar Rao, Bloomfield Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 824,942, Aug. 15, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 958
Int. Cl.[2] C03C *3/22;* **C04B** *35/18, 35/20*
U.S. Cl. 106—39.8 **4 Claims**



1. A process for forming an anistropic polycrystalline part of very fine grain size, low thermal expansion and very low firing shrinkage comprising grinding a magnesium aluminum silicate glass material with 0.2 to 0.5% of ferrous titanate into a fine powder, mixing with the said fine powder a quantity of crystalline powder of the same chemical composition as the glass material the quantity of which is less than approximately 60% and more than approximately 2% by weight, ball-milling the mixture to very fine particle size in the ½ micron to 40 micron range, adding the mixture to an organic polymer binder to facilitate forming of the finished part, said binder being capable of being burned off at a relatively low temperature, sintering the fabricated glass particles in a reducing or neutral atmosphere at temperatures of approximately 2,000° F. to effect bonding of the particles together and to trigger crystallization of the particles, the crystallization occurring initially at the surface of the particles thereby increasing the bond strength of the particles and increasing the strength of the material and reducing the thermal expansion.

4,225,355

AMORPHOUS BORON-CARBON ALLOY IN BULK FORM AND METHODS OF MAKING THE SAME

Francis S. Galasso, Manchester, Conn.; Roy Fanti, Springfield, Mass., and Richard D. Veltri, East Hartford, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 16, 1979, Ser. No. 12,929
Int. Cl.[2] C01B *31/36*
U.S. Cl. 106—43 **22 Claims**

1. A process of forming amorphous boron-carbon alloy in bulk form comprising:

subjecting a releasable mold reaction surface to a gaseous mixture of at least one boron-containing gas, at least one carbon-containing gas, and a reducing gas, at temperatures of 950° C. to 1300° C., and Reynolds Number flow condition of 40–120, until an amorphous boron-carbon alloy structure at least 40 mils thick is deposited on the mold reaction surface, and removing the formed structure from the mold reaction surface.

4,225,356

SINTERING OF SILICON NITRIDE USING BE ADDITIVE

Svante Prochazka, Ballston Lake; Charles D. Greskovich, Schenectady; Richard J. Charles, Schenectady, and Robert A. Giddings, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 15,122, Feb. 26, 1979, abandoned, which is a continuation of Ser. No. 849,177, Nov. 7, 1977, abandoned, which is a division of Ser. No. 756,085, Jan. 3, 1977, Pat. No. 4,119,689. This application Aug. 13, 1979, Ser. No. 66,038

Int. Cl.[2] C04B *35/58*

U.S. Cl. 106—73.5 **4 Claims**

1. An as-sintered polycrystalline silicon nitride product of complex shape of a preformed compact of particulate material, said as-sintered product having a density ranging from at least about 80% to about 100% of the theoretical density of silicon nitride, said as-sintered product consisting essentially of silicon nitride and beryllium, said silicon nitride ranging from the β-form to at least about 80% by weight β-form-20% by weight α-form based on the total amount of said silicon nitride, said beryllium ranging in amount from less than about 0.1% by weight to less than about 2.0% by weight of said silicon nitride, said as-sintered product according to X-ray diffraction analysis ranging from a single phase body to one comprised of a primary phase and a secondary phase.

4,225,357

METHOD OF PRODUCING AND DISTRIBUTING A PERVIOUS CONCRETE PRODUCT

Harry Hodson, 4730 Dunn Dr., Sarasota, Fla. 33583

Filed Mar. 9, 1979, Ser. No. 19,152

Int. Cl.[2] C04B *7/02*

U.S. Cl. 106—86 **8 Claims**

1. A method of producing a pervious concrete product of the type which allows fluids to pass therethrough, said method comprising the steps of:

(a) supplying a predetermined quantity of cement dependent on quantity and desired strength and performance characteristics of the resulting pervious concrete products,

(b) supplying a predetermined quantity of water depending on said predetermined quantity of supplied cement,

(c) continuously mixing together said predetermined quantities of cement and water to form a cementitious material utilizing high energy techniques, at least until said resulting cementitious material establishes a substantially consistent viscosity defined by separation of said water from said cement being substantially eliminated,

(d) supplying a predetermined quantity of aggregate depending upon quantity and desired strength and performance characteristics of the resulting concrete product, and wherein the average size of individual aggregate is dependent on desired permeability of the resulting concrete product,

(e) mixing said predetermined quantity of aggregate with said cementitious material subsequent to the mixing of said cement and water to form said pervious concrete product.

4,225,358

ADDITIVE FOR DEHUMIDIFYING PLASTER

Siegfried Maier, Westendstr. 2, Buchloe, Fed. Rep. of Germany (8938), assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 13, 1979, Ser. No. 20,200

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814317

Int. Cl.[3] C04B *7/35*

U.S. Cl. 106—90 **15 Claims**

1. An additive for use with dehumidifying cement-based plasters containing surface active agents including:

(a) 15–50 weight % of anionic sodium salts of alkylnapththalene sulfonic acids;

(b) 25–75 weight % of sodium salts of alkylphenol ether sulfate and/or alkylbenzene sulfonate; and

(c) 10–40 weight % of a butadiene free styrene interpolymer having an acid number of 5–15 as suitable for producing aqueous dispersions of plaster.

4,225,359

ACIDIC EARTHEN CEMENTED COMPOSITIONS FOR BUILDING MATERIALS AND PROCESS

Gordon L. Schneider, 4214 Cottage Cir. No. 3, Las Vegas, Nev. 89109

Filed Apr. 27, 1979, Ser. No. 34,189

Int. Cl.[2] C04B *7/352*

U.S. Cl. 106—93 **13 Claims**

1. An improved earthen construction composition comprising:

soil, a sulfonic acid, cellulose, and a cementing agent selected from the group consisting of Portland cement, $CaCo_3$, lime, asphalt, tars, synthetic and natural resins, and mixtures thereof.

4,225,360

TREATMENT OF GYPSUM PLASTER

Arthur G. T. Ward, Wilford, England, assignor to BPB Industries Limited, London, England

Continuation-in-part of Ser. No. 819,149, Jul. 26, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 974,010

Int. Cl.[2] C04B *11/00*

U.S. Cl. 106—109 **9 Claims**

1. A method of removing salt from gypsum plaster supplied to a manufacturing process for the production of set gypsum products which comprises rapidly and continuously mixing a continuous supply of dry salt-bearing gypsum plaster with a flow of water having a temperature below the hydration transition temperature of the gypsum plaster, continuously transferring the mixture of said plaster and said water to a continuous filter thereby separating a substantial portion of the water containing dissolved salt from the plaster by continuous filtration, the time elapsing between mixing of the plaster with water and separating a substantial proportion of the water being less than 30 seconds, thereby ensuring that unacceptable hydration does not occur, and conveying the damp or wet plaster to the manufacturing process.

4,225,361

GYPSUM PLASTER

Christian M. Joseph, Auzouer-Chateaurenault, France, assignor to Manufacture de Produits Chimiques Protex S.A., Paris, France

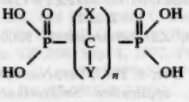
Filed Dec. 14, 1978, Ser. No. 969,569

Claims priority, application France, Dec. 14, 1977, 77 38540

Int. Cl.[3] C04B *11/14*

U.S. Cl. 106—111 **7 Claims**

1. A gypsum or anhydrite plaster composition, comprising said plaster and a small quantity sufficient to increase finishing time while reducing the quantity of water necessary and increasing mechanical strength, of an additive of at least one alkylene diphosphonic acid, or water soluble salt thereof, represented by the following general formula:



wherein X is a hydrogen atom or a lower alkyl group containing from 1 to 4 carbon atoms, Y is a hydrogen atom, a hydroxy radical or a lower alkyl group containing from 1 to 4 carbon atoms and n is a whole number between 1 and 10, inclusive.

4,225,362

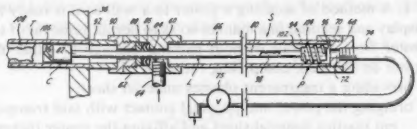
METHOD FOR CLEANING THE INTERIOR OF TUBES

John S. Sentell, Baton Rouge, La., assignor to Richard R. Paseman, Houston, Tex.

Division of Ser. No. 831,767, Sep. 9, 1977, Pat. No. 4,137,928. This application Jan. 18, 1979, Ser. No. 4,616

Int. Cl.² B08B *3/02*; B08S *9/04*

U.S. Cl. 134—24 **7 Claims**



1. A method of cleaning the interior of pipes, tubes and like elongate tubular objects with pressurized fluid, comprising:

(a) directing the fluid from a spray head at an end of a lance against the interior of the object for cleaning same;

(b) transporting the spray head through the object being cleaned;

(c) supplying the fluid to the spray head through the lance;

(d) causing, with the pressurized fluid, reciprocating longitudinal movement of the spray head through the object being cleaned; and

(e) causing, with the pressurized fluid, rotational movement of the spray head during longitudinal movement thereof to assist in cleaning the object.

4,225,363

METHOD FOR HEAT TREATING IRON-NICKEL-CHROMIUM ALLOY

Michael K. Korenko, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1978, Ser. No. 917,835

Int. Cl.² C21D *7/14*; C22D *1/10*

U.S. Cl. 148—12.7 N **5 Claims**

1. A method for heat treating an age-hardenable iron-nickel-chromium alloy consisting essentially of about 40 to 50% nickel, 7.5 to 14% chromium, 1.5 to 4% niobium, 0.3 to 0.75% silicon, 1 to 3% titanium, 0.1 to 0.5% aluminum, 0.02 to 1% carbon, 0.002 to 0.0015% boron and the remainder substantially all iron, which method comprises the steps of cold-working the alloy 20 to 60% followed by heating in the range of 1000° C. to 1100° C. for up to 1 hour with an air-cool, and thereafter heating the alloy in the range of 750° C. to 850° C. for 1.5 to 2.5 hours.

4,225,364

HIGH STRENGTH NICKEL-CHROMIUM-IRON AUSTENITIC ALLOY

Robert C. Gibson, Ringwood, N.J., and Michael K. Korenko, Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 22, 1978, Ser. No. 917,834

Int. Cl.² C22C *30/00*

U.S. Cl. 148—31 **4 Claims**

1. A solid solution strengthened alloy consisting essentially of about 42 to 48% nickel, 11 to 13% chromium, 2.6 to 3.4% niobium, 0.2 to 1.2% silicon, 0.5 to 1.5% vanadium, 2.6 to 3.4% molybdenum, 0.1 to 0.3% aluminum, 0.1 to 0.3% titanium, 0.02 to 0.05% carbon, 0.002 to 0.015% boron, up to 0.06% zirconium and the balance iron, the alloy being characterized in having a 2% yield strength of at least 450 MPa and an ultimate tensile strength of at least 500 MPa at a test temperature of 650° C. after solution annealing at 1038° C. for 1 hour plus 30% cold-work.

4,225,365

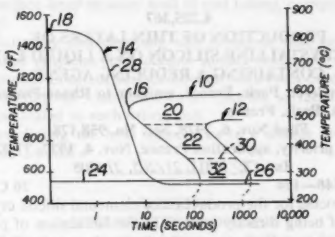
LOWER BAINITE ALLOY STEEL ARTICLE AND METHOD OF MAKING SAME

Stuart L. Rice, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 15, 1978, Ser. No. 965,534

Int. Cl.² C22C *33/00, 29/00*; C21D *1/18*

U.S. Cl. 148—36 **20 Claims**



1. A bainitic steel alloy article consisting essentially of carbon in the range of 0.60 to 0.80 Wt.%, manganese in the range of 0.45 to 1.00 Wt.%, silicon in the range of 0.15 to 2.20 Wt.%, molybdenum in the range of 0.40 to 0.70 Wt.%, boron in the range of about 0 to 0.004 Wt.%, a plurality of residual elements individually limited to less than 0.30 Wt.% and the balance substantially iron, said article having a substantially complete low temperature bainite morphology including less than 10 Vol.% retained austenite in the microstructure.

4,225,366

PROCESS FOR PRODUCING GRAIN ORIENTED ELECTRICAL SILICON STEEL SHEET CONTAINING ALUMINIUM

Jirou Harase, Fukuoka; Shozaburo Nakashima, and Yasukazu Mori, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Sep. 13, 1979, Ser. No. 75,673

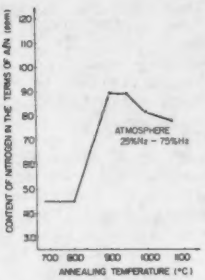
Claims priority, Application Japan, Oct. 2, 1978, 53-120440

Int. Cl.² H01F *1/04*

U.S. Cl. 148—111 **3 Claims**

1. A process for producing a grain oriented electrical silicon steel sheet containing aluminium and having an extremely high magnetic flux density, which process comprises secondary recrystallization annealing of a silicon sheet containing aluminium, which has been cold rolled and, then, decarburization annealed, in a reducing atmosphere, and which process is characterized in that in said secondary recrystallization annealing operation, during the time of elevating the temperature of said reducing atmosphere to a level within a range of from 850°

to 950° C., the content of nitrogen in said reducing atmosphere is limited to such an extent that the partial pressure of nitrogen is 20% or less based on the entire pressure of said reducing atmosphere, and then, during the time of elevating the temperature of said reducing atmosphere from a level at which the



secondary recrystallization of said steel sheet is started to a level at which the secondary recrystallization of said steel sheet is completed, the content of nitrogen in said reducing atmosphere is maintained at such a level that the partial pressure of nitrogen is at least 3% based on the entire pressure of said reducing atmosphere.

4,225,367

PRODUCTION OF THIN LAYERS OF POLYCRYSTALLINE SILICON ON A LIQUID LAYER CONTAINING A REDUCING AGENT

Didier Anglerot, Paris, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Nov. 6, 1978, Ser. No. 958,178
Claims priority, application France, Nov. 4, 1977, 77 33170
Int. Cl.[2] H01L *21/205, 21/208*
U.S. Cl. 148—174 **26 Claims**

1. A process for the production of elemental silicon crystals capable of being directly utilized in the fabrication of photovoltaic devices, which comprises introducing a gaseous silicon containing compound, in the absence of moisture and oxygen, into contact with a reaction medium comprising metallic zinc, in liquid state, and at least one second metal, also in liquid state, selected from the group consisting of tin, lead, gold, silver, antimony and bismuth, in a manner sufficient to react and reduce said silicon containing compound with the zinc constituent of said liquid metal mixture and to yield the resulting zinc compound product of reduction in the gaseous state.

4,225,368

COATING OF GRANULATED ORGANIC DYES WITH AN EPOXY

Joseph E. G. Couture, and Joseph N. A. Roy, both of Ste-Foy, Canada, assignors to Canadian Department of National Defence, Quebec, Canada

Filed Jun. 26, 1979, Ser. No. 52,302
Claims priority, application Canada, Mar. 2, 1979, 324566
Int. Cl.[2] C06B *45/10*
U.S. Cl. 149—19.9 **4 Claims**

1. A coloured pour-castable smoke-generating composition, consisting of

(a) 38–40%/w of an organic dye composition comprising about 90 parts of an organic dye having a particle size in the range of 100 to 1000 microns and 10 parts of an inert coating material comprising an epoxy resin, uniformly coating said organic dye,

(b) 30–32%/w of potassium chlorate as oxidizing agent,

(c) 8%/w of lactose as fuel,

(d) 2%/w of sodium bicarbonate as cooling agent, and

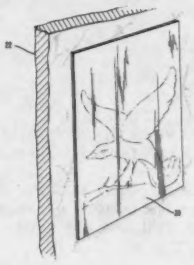
(e) 20%/w of a polybutadiene based binder.

4,225,369

METHOD OF SECURING SHEETS OR POSTER TO A BASE

Hermann Felchlin, Zürcherstrasse 1, 5200 Brugg-Windisch, Switzerland

Filed Dec. 8, 1977, Ser. No. 858,542
Claims priority, application Switzerland, Dec. 8, 1976, 15394/76
Int. Cl.[3] B32B *31/04, 31/20*
U.S. Cl. 156—71 **6 Claims**



1. A method of securing a poster to a wall so it is ready for display and secured in a manner so as to permit removal of the poster from the wall without causing damage to either the poster or the wall, comprising the steps of:

providing a transparent plastics material sheet;

bringing the poster into physical contact with said transparent plastics material sheet and affixing the poster thereto; and

adhering said transparent plastics material sheet to the wall without application of heat by wiping the wall with a means suitable for producing an electrostatic charge, and then pressing said plastics material sheet against the wall, the poster affixed to said plastics material sheet being thus ready for display on the wall, the poster thereby being secured in a manner so as to permit removal of the poster from the wall without causing damage to either the poster or the wall.

4,225,370

CONTRACTED FIBROUS OVERWRAP METHOD FOR THERMOPLASTIC COATED ARTICLE

Leland C. Dickey, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Jan. 8, 1979, Ser. No. 1,453
Int. Cl.[3] B29C *27/00;* **B31C** *81/00;* **B29C** *25/00*
U.S. Cl. 156—86 **14 Claims**

1. A method of coating an article of manufacture, comprising the steps of:

(a) applying a thermoplastic coating material to the article to form a distinct layer thereon;

(b) applying a layer of fibrous material over the coating material, said fibrous material being a fibrous product with relatively high wet strength which condenses while drying;

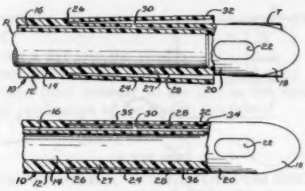
(c) wetting the layer of fibrous material with a wetting agent selected from the group consisting of water and aqueous solution; and

(d) heating the article, coating material, and wet fibrous material, whereby contraction of the fibrous material, during heating, will compress the coating material and counteract the deformation tendencies of the coating material such that it is well bonded to said article.

4,225,371
METHOD OF MAKING A CATHETER

Glenn N. Taylor, Cary, and Bhupendra C. Patel, Elgin, both of Ill., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 829,868, Sep. 1, 1977, Pat. No. 4,178,937.
This application Apr. 24, 1979, Ser. No. 32,836
Int. Cl.[3] B32B *31/00*
U.S. Cl. 156—152 3 Claims

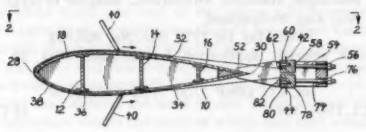


1. A method of making a catheter, comprising the steps of:
forming an elongated shaft of elastic material having an inflation lumen extending along the shaft;
severing an annular outer wall section of the shaft from an inner portion of the shaft while leaving one end of said section joined to the shaft;
establishing communication between the inflation lumen and the surface of said inner shaft portion; and
bonding a free end of said section to said shaft to define a cavity between said section and inner shaft portion.

4,225,372
SURFACE FINISHING

Jack A. Kinzler, Seabrook; James T. Heffernan, Friendswood; Leroy G. Fehrenkamp, Houston, and William S. Lee, Friendswood, all of Tex., assignors to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 785,279, Apr. 6, 1977, abandoned, which is a division of Ser. No. 568,541, Apr. 16, 1975, Pat. No. 4,032,089. This application Jan. 25, 1979, Ser. No. 6,952
Int. Cl.[3] B32B *31/18*
U.S. Cl. 156—154 18 Claims



1. A method of smoothing the surface of an article adapted for relative motion with a fluid environment, said surface containing surface irregularities therein, comprising the steps of:
(a) coating said surface with a fluid adhesive/filler material;
(b) covering said adhesive/filler material with a preformed flexible, substantially inelastic film of a controlled uniform thickness;
(c) applying tension to said film by pulling its edges with a force less than that which would result in any effective stretching of the film in a direction along the surface such as to allow said film to be pulled over said surface without conforming to said surface irregularities, said pulling serving to enhance the stiffness of said film and causing it to serve as a smooth outer straightedge optimally conforming to the desired contour of the surface and further to act as an automatic gauge to simultaneously redistribute and control the flow and positioning, and thus minimize the quantity of adhesive/filler material so as to result in an inner layer of varying thickness from an amount just sufficient to act as an adhesive to an amount just sufficient to fill in said surface irregularities; and
(d) setting said adhesive/filler material while maintaining tension on said film whereby said tensioned film is bonded to said surface by said adhesive/filler material, providing a smooth uninterrupted finish thereto.

8. The method of claim 1 wherein said surface includes an unfinished portion and said film material includes an unbonded portion adjacent said unfinished portion of said surface and further including the step of trimming away said unbonded portion of said film material and smoothing the trimmed edge of said film material to provide a smooth interface between said film material and said unfinished portion of said surface.

4,225,373
SEALING CROSS-LINKED THERMOPLASTIC MATERIALS

Anne C. Bieler, Mauldin, and Milton A. Howe, Jr., Spartanburg, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Dec. 22, 1976, Ser. No. 753,038
Int. Cl.[2] B29D *17/00*
U.S. Cl. 156—198 1 Claim

1. A method of improving the closure seal of a flexible receptacle formed from thermoplastic tubing wherein the tubing comprises multi-layer thermoplastic film having a layer of cross-linked ethylene-vinyl acetate copolymer having from about 2% to about 30% vinyl acetate content by weight, said film having a thickness less than about 2.5 mils and said cross-linked ethylene-vinyl acetate copolymer layer forming the inner surface layer or inner wall of said tubing, comprising the steps of:
(a) flattening and clamping said tubing so that said cross-linked ethylene-vinyl acetate surface layers are clamped together in direct surface contact with each other;
(b) Heating the clamped area so that the surfaces become heat sealed to each other; and,
(c) irradiating the heat sealed area to a dosage level of at least 2.0 MR.

4,225,374
DECORATIVE FLOORING

John C. Kaufmann, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 20, 1978, Ser. No. 898,456
Int. Cl.[2] B29C *17/04, 21/00*; B29D *7/14*; B32B *31/18*
U.S. Cl. 156—220 1 Claim

1. A method of making a floor covering product comprising the steps of:
(a) calendering into a base layer sheet a heated mass of particles of thermoplastic material;
(b) depositing said sheet of thermoplastic material upon a heated nondistensible controlled release carrier that exhibits hot adherence and cold release;
(c) conveying said sheet of thermoplastic material and the nondistensible controlled release carrier past heaters to achieve the correct temperatures for design application and adherence of the sheet to the carrier;
(d) laminating at the design application station a preprinted transfer paper containing a design and registration band printed thereon to the heated surface of the sheet material with pressure and simultaneously adhering said sheet to the nondistensible controlled release carrier to prevent subsequent distortion;
(e) cooling said transfer paper and then removing said transfer paper from the sheet material leaving a printed design

on the sheet material and the sheet material still adhered to the nondistensible controlled release carrier, said transfer paper being stripped from and pulled in a direction backward from the path of travel of the sheet material whereby the stripping results in clean removal of the transfer paper from the sheet material;

(f) applying a clear film wear layer to the surface of the sheet material with even adherence to the clear film wear layer to the sheet material simultaneous with the cross machine direction alignment of the printed sheet material adhered to the nondistensible controlled release carrier to the embossing roll;

(g) subsequently embossing-in-register the composite sheet material without distortion thereof, said sheet material consisting of a base layer, printed design and clear wear layer;

(h) cooling said composite sheet material;

(i) stripping said composite sheet from the undistensible controlled release carrier by said cooling and change in direction of the carrier;

(j) cutting said composite sheet in register with said design thereon into a number of individual tile units;

(k) annealing said tile units to stress relieve said tile units; and

(l) final sizing said tile units.

4,225,375

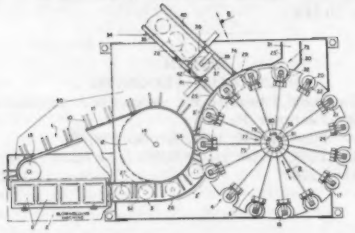
METHOD FOR MANUFACTURING FLAT-BOTTOMED PLASTIC BOTTLES

Samuel S. Aidlin, 214 Beaumont St., Brooklyn, N.Y. 11235, and Stephen H. Aidlin, 934 Glenwood Rd., W. Hempstead, N.Y. 11552

Division of Ser. No. 855,799, Nov. 29, 1977, Pat. No. 4,132,584. This application Nov. 7, 1978, Ser. No. 958,525

Int. Cl.[3] **B29B** *5/00;* **B29C** *17/00;* **B29F** *1/10*

U.S. Cl. 156—242 **4 Claims**



1. A process for producing plastic bottles with substantially flat undersides, comprising the steps of:

blow-molding a series of hollow plastic container members having round bottom surfaces;

separately molding a series of flat-bottomed base members with concave upper surfaces substantially complementary to said bottom surfaces;

advancing said series of container members stepwise over an assigned path past a merger point while directing said series of base members toward a location close to said merger point;

briefly arresting each base member at said location;

adhesively coating each arrested base member at said location;

propelling each coated base member with the aid of a jet of air to said merger point in timed relationship with the advance of said container members;

interfitting each container member and a respective base member, meeting at said merger point, with their complementary surfaces contacting each other; and

maintaining said contact during further advance of said members beyond said merger point.

4,225,376

METHOD FOR PRODUCING A LAMINATED SURFACE

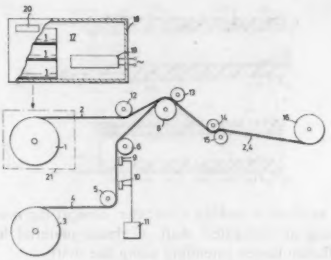
Rolf Berg, Djursholm, Sweden, assignor to Assi Can Aktiebolag, Stockholm, Sweden

Filed May 25, 1978, Ser. No. 909,428

Claims priority, application Sweden, Oct. 4, 1977, 7711063

Int. Cl.[2] **B29C** *27/02;* **C09J** *5/06*

U.S. Cl. 156—272 **18 Claims**



1. A method of bonding a first web, taken from a first storage reel, to a second web taken from a second storage reel, each of said webs having a polyolefin resin surface thereon comprising the steps of heating the polyolefin resin surface of the first web to a tacky or molten state, heating the polyolefin resin surface of the second web to a given temperature beneath the melting temperature thereof prior to unreeling the second web, substantially maintaining said temperature of the second web throughout the remaining steps, and pressing said polyolefin resin surfaces together while the polyolefin resin surface on the first web remains in the tacky or molten state to form a laminate, the temperature of the second web at lamination being of a magnitude such that said polyolefin resin surfaces, when pressed together, will be joined to form a substantially permanent bond therebetween.

4,225,377

METHOD FOR STIFFENING AND DYEING TEXTILE FABRIC

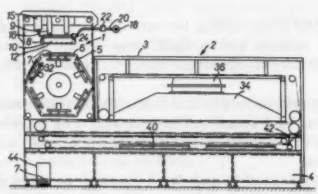
Hans Bachtiger, Stallikon, Switzerland, assignor to Gygli Technik AG, Zug, Switzerland

Filed May 16, 1978, Ser. No. 906,945

Claims priority, application Switzerland, May 20, 1977, 6262/77

Int. Cl.[2] **D06P** *5/00, 7/00;* **C09J** *5/04*

U.S. Cl. 156—314 **15 Claims**



1. In a method for stiffening and additionally further treating textile fabric by applying a flowable stiffening agent to the fabric by means of screen printing, after which the fabric is dried, and utilizing the steps of

providing a pressure tank or vessel (**8**) having a screen printing form (**10**) forming one wall thereof;

locating said fabric (**7**) adjacent one side of the screen printing form with a surface thereof facing the screen printing form;

introducing a stiffening agent into the vessel (**8**) and distrib-

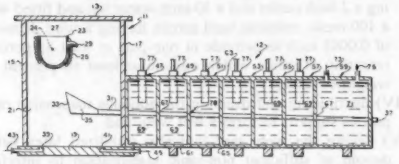
uting said stiffening agent over the whole side of the screen printing form remote from the textile fabric;
maintaining the level of stiffening agent spaced over the screen printing form;
screen printing the stiffening agent onto the fabric by applying controlled fluid pressure to the stiffening agent to thereby control the thickness of the stiffening agent coating applied to the textile fabric by control of the pressure of the stiffening agent passing through the screen printing form;
and comprising, in accordance with the improvement, the step of
introducing a dye into the vessel;
and screen printing the fabric with the dye by applying controlled fluid pressure to the dye in the vessel (8) to control application of the dye to the fabric.

4,225,378

EXTRUSION MOLD AND METHOD FOR GROWING MONOCRYSTALLINE STRUCTURES

Lilburn H. Garrison, Vista, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 27, 1978, Ser. No. 973,621
Int. Cl.³ C30B *15/06*
U.S. Cl. 156—608 **24 Claims**



1. A method of growing a monocrystalline body from a polycrystalline melt of the same material, the steps of said method comprising:
placing a seed crystal attached to a pull rod or web inside an enclosed extrusion mold made of material that is non-reactive to said melt from an end of said mold exposed to the atmosphere;
maintaining a fixed temperature gradient along the length of the mold from one end to the other which gradually decreases from a temperature slightly lower than the melt, but still above its melting point at one end to a temperature at the other end that would decrease the temperature of the exiting monocrystalline body sufficiently to expose it to the atmosphere, the seed crystal being located at the temperature within the mold at which said melt solidifies; and
pouring the polycrystalline melt into the open hot end of said enclosed extrusion mold, said extrusion mold being at a slight downhill angle from its hot to its cool end; and
forming said monocrystalline body by pulling the seed crystal out of said extrusion mold and into the atmosphere.

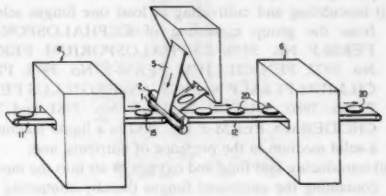
4,225,379

METHOD OF LAMINATING PLASTIC FILM AND SHAPED METAL SUBSTRATES

Tsuneji Ishii; Tetsuro Tsukada; Takeshi Abe, and Tsutomu Koyama, all of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Filed Nov. 30, 1977, Ser. No. 856,100
Claims priority, application Japan, Dec. 13, 1976, 51-148724; Dec. 13, 1976, 51-148725
Int. Cl.² C23F *1/00*; B32B *31/00*
U.S. Cl. 156—629 **11 Claims**

1. A method of laminating a plastic film and shaped metal substrates utilizing a pair of rollers, said pair of rollers comprising at least one heat resistant roll having a hollow, the depth of which is equal to the thickness of said substrate ±1.5 mm, capable of receiving at least a forward edge of the shaped metal substrates, said method comprising:
treating the surface of the shaped metal substrates such that surface roughness of the surface is less than 100 microns;
preheating the shaped metal substrates, the upper limit of the preheating temperature being set lower than thermal decomposition initiation temperature of the plastic film and the lower limit being set 5°–100° C. higher than the melting point or melt flowable temperature;



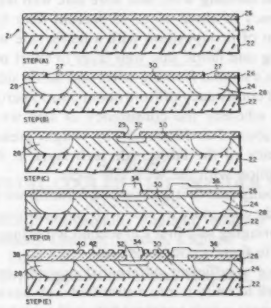
melt bonding the plastic film on the shaped metal substrates by passing said shaped metal substrates together with said plastic film, under compression, between said pair of rolls wherein clearance at the forward edge between the hollow and the shaped metal substrates is greater than 0 mm and less than 10 mm; and
contacting the shaped metal substrates, all of which are the same shape with uniformly varying widths, with the rolls whereby the plastic film is cut by the edge of the shaped metal substrates.

4,225,380

METHOD OF PRODUCING LIGHT EMITTING SEMICONDUCTOR DISPLAY

Justin H. Wickens, 1030 Mullen Way, Vista, Calif. 92083

Filed Sep. 5, 1978, Ser. No. 939,537
Int. Cl.² G02B *5/18*; H01L *21/308*
U.S. Cl. 156—657 **10 Claims**



1. In the process of fabricating an electrooptical device by means of the epitaxial growth of a silicon wafer using a series of conventional oxidizing, photomasking, etching, diffusion and metallizing steps, with intermediate oxidizing steps therebetween to form a thin transparent protective layer of silicon dioxide, the final oxidizing step forming a silicon dioxide layer having a predetermined thickness capable of containing a lens structure, and removing intermittent portions of the silicon layer to a depth less than said predetermined thickness to form a totally transparent Fresnel lens thereby providing a predetermined light pattern.

4,225,381

METHOD FOR REMOVING ODOR FROM FLUID

Hisao Ishikawa; Yukio Kita, and Kouki Horikoshi, all of Tokyo, Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,637
Int. Cl.[2] D21C 11/08
U.S. Cl. 162—51 2 Claims

1. A method for removing odor from a fluid containing malodorous substances derived from sulfur compounds selected from the group consisting of hydrogen sulfide, methyl mercaptan, dimethyl sulfide, dimethyl disulfide and thiophene, comprising the steps of:

(i) inoculating and cultivating at least one fungus selected from the group consisting of CEPHALOSPORIUM FERM-P No. 3976, CEPHALOSPORIUM FERM-P No. 3977, PENICILLIUM FERM-P No. 3978, PENICILLIUM FERM-P No. 3979, ASPERGILLUS FERM-P No. 3980, MUCOR FERM-P No. 3981 and TRICHODERMA FERM-P No. 3982 in a liquid medium or a solid medium in the presence of nutrients, and;

(ii) introducing said fluid and oxygen or air into the medium containing the cultivated fungus thereby contacting said fluid with the fungus, whereby the malodorous sulfur compounds are decomposed by the action of the fungus.

4,225,382

METHOD OF MAKING PLY-SEPARABLE PAPER

Donald R. Kearney, Cincinnati; Paul D. Trokhan, Hamilton, and Edward R. Wells, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 870,785, Jan. 19, 1978, abandoned. This application May 24, 1979, Ser. No. 41,846
Int. Cl.[3] D21H 5/24; B21F 1/12
U.S. Cl. 162—111 11 Claims

1. A method to produce a ply-separable web, comprising the steps of:

(a) forming a wire side web layer of long papermaking fibers on a first forming wire, said wire side web layer having a consistency of about 10 to 25 percent fiber by weight at the point of juxtaposition with a fabric side web;

(b) forming said fabric side web layer of short papermaking fibers on a second forming wire, said fabric side web layer having a consistency of from about 5 to 15 percent fiber by weight, whereby the consistency of said wire side web layer is about 5 to 10 percent by weight greater than the consistency of the fabric side web layer at the point of juxtaposition with the wire side web:

(c) juxtaposing said first and second forming wires with said fabric side web and wire side web layers disposed therebetween, bringing said first and second wires into contacting relation to form a combined web;

(d) applying a sufficient differential pressure to said combined web to unify it into a stratified web having first and second strata which are weakly bound together by papermaking bonds;

(e) applying a partial vacuum to said stratified web adjacent said fabric side of the web, whereby to transfer said stratified web to an intermediate drying fabric and to reduce the adherence of said wire side web and fabric side web layers to each other;

(f) drying said stratified web while it is on said intermediate drying fabric, to a consistency of about 85 to 100 percent fibers by weight; and

(g) creping said stratified web in a single operation to produce a web with creping which is equal in frequency and simultaneous in phase in each layer of said stratified web.

4,225,383

HIGHLY FILLED SHEETS AND METHOD OF PREPARATION THEREOF

Kent B. McReynolds, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 874,458, Feb. 2, 1978, abandoned. This application Dec. 14, 1978, Ser. No. 969,749
Int. Cl.[2] D21H 5/18
U.S. Cl. 162—156 24 Claims

1. A method for preparing a sheet comprising:

(I) providing an aqueous dispersion of from about 1 percent to about 30 percent of a water-dispersible fiber;

(II) mixing therewith (A) from about 60 percent to about 95 percent of a finely-divided, substantially water-insoluble, non-fibrous, inorganic filler and (B) from about 2 percent to about 30 percent of a binder containing a film-forming, water-insoluble, organic polymer in the form of an ionically stabilized latex having not greater than 0.7 milliequivalent of bound charge per gram of polymer in the latex;

(III) colloidally destabilizing the resulting mixture to form a fibrous agglomerate in aqueous suspension having the characteristics that at a concentration of 100 grams of solids in 13,500 milliliters, the suspension will drain in a time of from about 4 seconds to about 120 seconds in a 10-inch by 12-inch Williams Standard Sheet Mould having a 2-inch outlet and a 30-inch water leg and fitted with a 100-mesh, stainless steel screen having a wire diameter of 0.0045 inch to provide in one pass at least 85 percent retention of solids which contain at least 60 percent by weight of filler;

(IV) distributing and draining the aqueous suspension on a porous support to form a wet web; and

(V) drying the web; said ionically stabilized latex being devoid of sufficient non-ionic stabilization to interfere with formation of the fibrous agglomerate; said percentages being on a dry weight basis, calculated on the total dry weight.

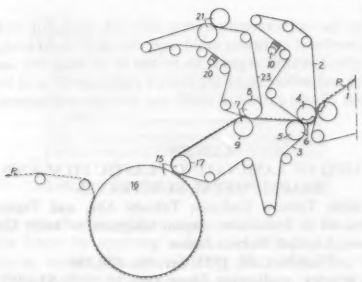
20. The method of claim 1 in which the fiber includes glass fibers.

4,225,384

METHOD OF OPERATING A PAPER MACHINE, PARTICULARLY A PRESS SECTION THEREOF

Paavo J. Valkama, Leppäluoto, Finland, assignor to Oy Wilh. Schauman Ab, Finland

Filed Feb. 17, 1978, Ser. No. 878,917
Claims priority, application Finland, Feb. 18, 1977, 770540
Int. Cl.[2] D21F 11/02
U.S. Cl. 162—199 8 Claims



1. In a method of manufacturing an upset fiber web such as non-crepe paper, cardboard, or the equivalent thereof, which has the property of being stretchable and/or the property of having a high coefficient of friction, the steps of shortening or upsetting the web, conveying the web after it has been short-

ened or upset to the first press nip of a press section and then to subsequent press nips thereof where the web is interposed between a common fabric means which is common to and travels to all of the press nips and an additional fabric means which travels at least to the first and second press nips with the web being interposed between the common fabric means and the additional fabric means at the first and second press nips while retaining the additional fabric means spaced from the web as the latter travels from the first to the second press nip, and drying the additional fabric means at least subsequent to one of said first and second press nips for removing from the additional fabric means water received thereby from said web.

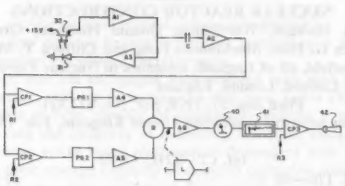
4,225,385
SHIVE RATIO ANALYZER

Horatio Hughes, Jr., Charleston, and Robert A. Schilling, Charleston Heights, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 812,056, Jul. 1, 1977, abandoned. This application Jan. 15, 1979, Ser. No. 3,161

Int. Cl.[2] G01N *15/02, 21/28*

U.S. Cl. 162—263 **10 Claims**



1. An apparatus for determining the relative presence of shives within a paper pulp slurry of 0.1% consistency or less comprising:

a conduit having a transparent photodetector window for carrying a flow stream of said slurry therethrough;

a photodetection cell comprising a light source and light sensor for generating a first electric signal responsive to the quantity of source light received by said sensor after passing through said window and a flow stream of said slurry therein;

signal filter means for segregating variable amplitude pulse components of said first signal from an average d.c. value of said first signal and transmitting said variable amplitude pulse component as a second signal, said variable amplitude pulses being derived from the presence of particulates in said slurry flowing past said window and blocking the incidence of light on said sensor, the amplitude of each pulse being directly proportional to the size of the respective particle;

comparative discriminator means responsive to said second signal to generate a third signal pulse for each pulse in said second signal having an amplitude exceeding a predetermined reference value distinctive to a shive particle;

first pulse counting means for cyclically determining the number of second signal pulses received thereby in a fixed time interval and emitting a fourth signal that is cyclically adjusted and proportional to the time rate flow of said first signal pulses;

second pulse counting means for cyclically determining the number of third signal pulses received therein in the same fixed time interval as applied to said first pulse counting means and emitting a cyclically adjusted fifth signal proportional to the time rate flow of said second signal pulses; and

signal ratio means for combining said fourth and fifth signals to derive a relative proportionality therebetween and emit a sixth signal proportional to said relative proportionality.

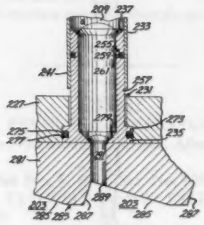
4,225,386
HEADBOX FOR A PAPER MACHINE

Karl G. Edblom; Kenneth I. Nordin; Per O. Staaf; Erik G. Stenberg; Nils-Erik Strand, all of Karlstad, and Bo L. H. Svensson, Molkom, all of Sweden, assignors to Aktiebolaget Karlstads Mekaniska Werkstad, Karlstad, Sweden

Filed Mar. 19, 1979, Ser. No. 21,443

Int. Cl.[3] D21F *1/02*

U.S. Cl. 162—343 **18 Claims**



1. In stock flow alignment means for the headbox of a paper machine or the like, the combination of upstream and downstream apertured tube plates extending in the cross machine direction and spaced apart in the direction of stock flow, and a bank of laterally unsupported, composite tubes secured at their opposite ends in apertures in said respective tube plates and extending in the direction of stock flow, each of said composite tubes comprising a first tubular element of a given inner and outer diameter having one end secured in an aperture in said upstream tube plate and having a free end extending into the free end of a second tubular element with a greater inner diameter than the outer diameter of the first tubular element, the other end of said second tubular element being secured in an aperture in said downstream tube plate, and retaining means positioned between and retaining the overlapping free ends of each of said first and second tubular elements in telescoping, liquid tight relation to form a plurality of channels, each increasing stepwise in cross section in the direction of stock flow.

4,225,387
LIQUID METAL COOLED FAST BREEDER NUCLEAR REACTORS

John A. Gatley, Warrington, England, assignor to Nuclear Power Company Limited, London, England

Filed Feb. 22, 1979, Ser. No. 13,816

Claims priority, application United Kingdom, Mar. 7, 1978, 9078/78

Int. Cl.[2] G21C *15/00*

U.S. Cl. 176—18 **4 Claims**

1. An improved liquid metal cooled fast breeder nuclear reactor having a fuel assembly in which each of at least some breeder sub-assemblies has an electromagnetic brake for regulating the flow of coolant through the sub-assembly, the magnetic brakes being temperature sensitive, wherein the improvement comprises a fluidic flow control device in each of the breeder sub-assemblies having an electromagnetic brake and means for dividing the coolant flow through said sub-assemblies into major and minor fractions, the major fraction flow being by way of the fluidic flow control device and, successively, a bundle of fuel pins whilst the minor flow is by way of

the electromagnetic brake, the electromagnetic brake being sensitive to the major flow outlet temperature and a control

component of force for the fluidic flow control device being derived from the back pressure of the minor flow.

4,225,388

CRACK DETECTION CELL FOR CHECKING THE LEAKPROOFNESS OF FUEL ELEMENT UNITS

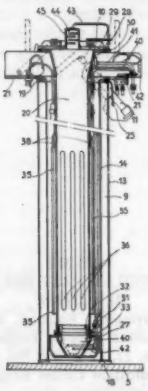
Hubert Bellaiche, Fontenay aux Roses, and Vladimir Zecevic, Velizy, both of France, assignors to Societe Franco-Americaine de Constructions Atomiques Framatome, Courbevoie, France

Filed Apr. 27, 1978, Ser. No. 901,007

Claims priority, application France, Apr. 29, 1977, 77 12938

Int. Cl.[2] G21C *17/00*

U.S. Cl. 176—19 LD **3 Claims**



1. A crack detection cell for checking the leakproofness of a fuel element in the deactivation swimming pool of a nuclear reactor, by measuring the gamma activity of fluids in contact with the fuel unit, said cell comprising:

a double-walled chamber for resting vertically on the bottom of the deactivation swimming pool, the external wall of said chamber defining orifices which connect the gap between said walls of said chamber with the swimming pool;

means for connecting said gap to a source of inert gas under pressure for creating a heat barrier between the interior of said chamber and the deactivation swimming pool;

a leakproof pocket for receiving a fuel unit in a vertical position, said pocket being located inside said chamber and comprising an upper part for serving as a zone for introducing said unit and a leakproof cover for closing said pocket;

means for introducing water into, and for removing water from, said pocket;

heating means mounted on the lower part of said pocket and for heating water contained in said pocket by direct contact to cause a rise in temperature of a fuel element in said pocket;

means for circulating said inert gas in said pocket; and

means for continuously measuring the activity of the gas which has passed through the water contained in said pocket and in which the fuel element is immersed.

4,225,389

NUCLEAR REACTOR CONSTRUCTIONS

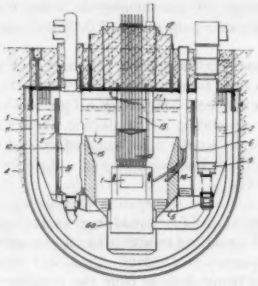
Roy S. Howard, Warrington; Donald Hodgson, Ormskirk; James G. Dale, Stockton-on-Tees, and Clifford T. M. Hall, Sedgefield, all of England, assignors to Nuclear Power Company Limited, London, England

Filed Jan. 27, 1978, Ser. No. 872,821

Claims priority, application United Kingdom, Feb. 15, 1977, 6302/77

Int. Cl.[2] G21C *13/02*

U.S. Cl. 176—40 **7 Claims**



1. A nuclear reactor construction comprising a wall and thermal insulation cladding a surface of said wall,

the thermal insulation comprising a plurality of spaced layers of material lying substantially parallel to the wall surface,

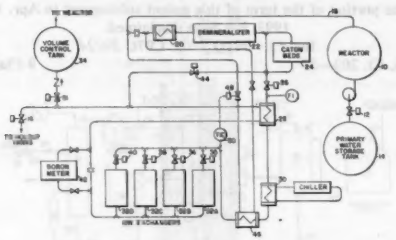
each layer of material comprising a plurality of rectilinear panels secured to the wall surface in spaced array in vertical and horizontal rows, and

closure members for the spaces between the panels, said closure members being cruciform in shape, the edges of adjacent panels being received in elongate channels formed by the longitudinal edges of the arms of the cruciform-shaped closure members whereby peripheral face regions of both sides of each panel in an array are overlapped by the sides of the channels, the cruciform members and panels being stacked and arranged so that successive superposed arms of a stack of cruciform members overlap peripheral regions of both faces of successive panels in an adjacent stack, the panels being spaced from the walls and bases of the channels thereby to create labyrinth barriers to fluid flow through the spaced layers.

4,225,390
BORON CONTROL SYSTEM FOR A NUCLEAR POWER PLANT

William W. Brown, Monroeville, and Martinus R. Van der Schoot, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 2,797, Jan. 14, 1970, abandoned. This application Sep. 18, 1972, Ser. No. 290,053
Int. Cl.[2] G21C *7/00*
U.S. Cl. 176—86 L 11 Claims



1. A nuclear reactor control system comprising:
a nuclear reactor having a coolant containing a neutron absorber circulating therethrough,
at least one ion exchanger flow-coupled with said nuclear reactor; said ion exchanger having basic anion exchange resins therein capable of chemically storing a material having the property of capturing neutrons, said ion exchange resins being temperature dependent with respect to their storage capacity of neutron capturing material;
at least one heat exchanger flow-coupled to the ion exchanger and the reactor for varying the temperature of the coolant influent to said ion exchanger;
means selectively connecting the outlet of said ion exchanger with said reactor for supplying coolant effluent therefrom to the reactor to accommodate reactor load follow operations; and
at least one evaporator capable of concentrating a solution of said neutron capturing material flow-coupled to the ion exchanger for selectively receiving the coolant effluent from said ion exchanger,
means connecting said evaporator with a high concentration tank and a low concentration tank to thereby provide separate solutions having a high concentration of neutron capturing material and a low concentration of neutron capturing material; and
means separately connected to said high and low concentration tanks for separately supplying the effluent therefrom to said reactor to accommodate major changes in reactor load.

4,225,391
METHOD OF PREPARING COALS FOR COKING

Michael Perch, and Alex Peterson, Jr., both of Pittsburgh, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

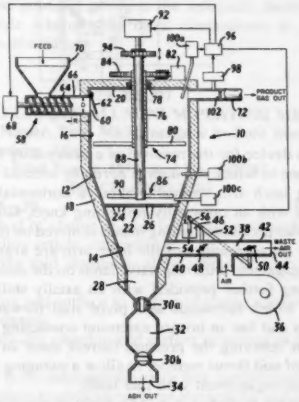
Filed Jul. 31, 1978, Ser. No. 929,491
Int. Cl.[3] C10B *53/08*
U.S. Cl. 201—6 10 Claims

1. A method of utilizing blends of marginal coking quality coals in coking operations to produce acceptable quality coke therefrom without increasing coke oven wall pressure beyond acceptable limits, comprising:
(a) blending low to medium volatile content coal with high volatile content coal both of marginal coking quality, to form a coal blend, said blend being composed of a range of 10% to 40% low to medium volatile content coal blended with a range of 90% to 60% high volatile content coal, by weight;
(b) combining a portion of said coal blend with a coal-tar based emulsion binder in such manner that said portion of said coal blend is throughly wetted by said binder, to form a combination thereof;
(c) compacting said combination of said portion of said coal blend and said binder in a roll press, utilizing smooth rolls, at a pressure sufficient to produce flakes;
(d) adding said flakes to the other portion of said coal blend in a sufficient amount that said flakes range between about 1% and 50% by weight of the mixture thereby resulting;
(e) charging a horizontal coke oven with said mixture thereby resulting; and
(f) coking said mixture resulting therefrom, in a conventional coke oven.

4,225,392
PYROLYSIS APPARATUS

Leland T. Taylor, 701 Madison St. NE., Albuquerque, N. Mex. 87110

Filed Sep. 5, 1978, Ser. No. 939,204
Int. Cl.[2] C10B *9/00, 1/04;* C10J *3/20*
U.S. Cl. 202—93 22 Claims

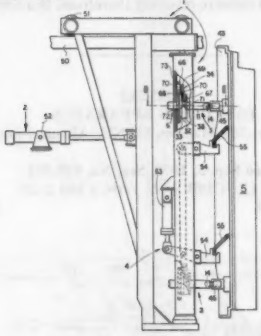


1. A pyrolysis apparatus comprising:
(a) a sealed reaction vessel;
(b) a lower portion of said vessel having a tapering shape, said tapering shape having its apex downwardly located;
(c) a grate located intermediate the upper and lower ends of said tapering shape extending substantially across the entire cross-section thereof dividing said lower portion of said vessel into an upper sector and a lower sector;
(d) a movable lower agitator above said grate;
(e) said lower agitator being displaceable toward and away from said grate;
(f) an upper agitator above said lower agitator operable independently of the lower agitator;
(g) feed means for feeding raw material to be pyrolyzed to said reaction vessel above said grate;
(h) means for varying the agitation of said lower agitator to control the feed rate of said material to be pyrolyzed to said grate;
(i) air pressure supply means for supplying air under pressure to said reaction vessel below said grate to sustain a combustion zone within said upper sector just above said grate;
(j) means for varying said air pressure;
(k) means for removing uncombusted residue below said grate; and
(l) means for removing gaseous products from the top of said reaction vessel.

4,225,393
DOOR-REMOVAL DEVICE

Karl Gregor, Bochum, and Karl Feldhaus, Gelsenkirchen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Schalker Eisenhütte, Gelsenkirchen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 869,173, Jan. 13, 1978, abandoned. This application Jun. 14, 1978, Ser. No. 915,380
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755108
Int. Cl.[2] C10B *25/00;* B66C *13/00*
U.S. Cl. 202—248 9 Claims



1. In a device for the removal of a heavy-duty door from a door frame to which the door is normally secured by a frame-engaging latch arm swingable about a horizontal pivot stud provided with an outwardly projecting knob, said latch arm being under pressure of spring means centered on its swing axis whereby the extremities of the latch arm are urged into frictional engagement with respective lands on the door frame, the door being further provided with an axially shiftable thrust member which surrounds said pivot stud forwardly of the latch arm and has an inward extension contacting said spring means for relieving the pressure thereof upon an inward repression of said thrust member to allow a swinging of the latch arm out of engagement with said lands,

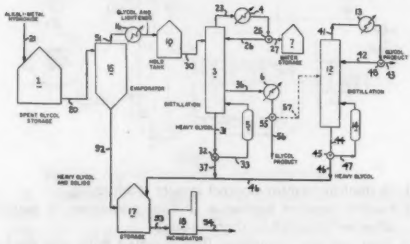
said device including a mobile body displaceable along a base in the direction of said axis and provided with door-engaging means, hydraulic drive means anchored to said base and to said body for displacing the latter between a withdrawn position remote from said door frame and an advanced position close to said door frame, said door-engagement means being operative in said advanced position, unlatching means on said body including a gripper rod and a surrounding pressure sleeve limitedly relatively movable along said axis, said gripper rod having cam-controlled claw means engageable in said advanced position with the knob of a door latched to said door frame for obtaining a purchase on said pivot stud, said pressure member being aligned with the thrust member of the latched door in said advanced position, and hydraulic actuating means operable independently of said drive means for repressing said thrust member to facilitate a disengagement of said latch arm from said lands, said actuating means including a cylinder connectable to a source of hydraulic fluid, a piston in said cylinder, and valve means controlling the admission of hydraulic fluid from said source to said cylinder,

the improvement wherein said actuating means forma a structural unit with said gripper rod and said pressure sleeve, said piston being rigid with said gripper rod, said cylinder constituting an extension of said pressure sleeve and forming therewith a tubular assembly around said gripper rod and said piston, said tubular assembly being anchored to said body by a flexible connection.

4,225,394
RECLAMATION OF SPENT GLYCOL BY TREATMENT WITH ALKALI METAL HYDROXIDE AND DISTILLATION

Jerry W. Cox, and Mulkey C. Wilkes, both of Beaumont, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 544,727, Jan. 28, 1975, abandoned, which is a division of Ser. No. 224,259, Feb. 7, 1972, Pat. No. 3,878,055, which is a continuation-in-part of Ser. No. 43,596, Jun. 4, 1970, abandoned. This application Apr. 14, 1976, Ser. No. 676,953
The portion of the term of this patent subsequent to Apr. 15, 1992, has been disclaimed.
Int. Cl.[2] B01D *3/00;* C07C *29/24*
U.S. Cl. 203—37 9 Claims



1. A method for recovering ethylene glycol from spent glycol containing at least 0.1 weight percent dimethyl terephthalate, comprising the sequential steps of:

(a) treating the spent glycol at at least 30° C. with about 0.02 weight percent alkali metal hydroxide based on the spent glycol, said amount of alkali metal hydroxide being sufficient to catalyze the reaction of dimethyl terephthalate with ethylene glycol to form high boilers but insufficient to saponify completely the dimethyl terephthalate;

(b) and distilling the said alkali metal hydroxide treated spent glycol to recover;

(1) a stream of low boilers comprising water as an overhead fraction,

(2) a product stream of antifreeze quality ethylene glycol, and

(3) a stream of high boilers including ethylene glycol as a bottoms fraction.

4,225,395
REMOVAL OF OXIDES FROM ALKALI METAL MELTS BY REDUCTIVE TITRATION TO ELECTRICAL RESISTANCE-CHANGE END POINTS

Floris Y. Tsang, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 26, 1978, Ser. No. 955,052
Int. Cl.[2] G01N *27/26*
U.S. Cl. 204—1 T 11 Claims

1. The method of reducing the content of an alkali metal oxide, M_2O, dissolved in an alkali metal melt, comprising

(1) adding to and dissolving in said melt an alkaline earth or lanthanoid series metal, M′, thereby reducing said oxide and forming an oxide, M′O, which is essentially insoluble in said melt, according to the equation

$$M_2O + M' \rightarrow M'O \downarrow + 2M,$$

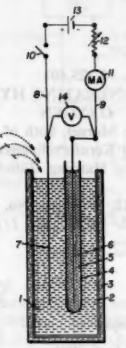
(2) disposing said melt in contact with a first face of a membrane which

(a) is conductive to M^+ ions but is essentially non-conductive to cations of the metal M′, and

(b) has an opposed face in contact with an electrically conductive counter-material which, when negatively

polarized with respect to said melt, will accept M^+ ions from the membrane,

(3) imposing a potential difference, across the membrane, of such magnitude and polarity that M^+ ions pass through the membrane from the melt to the counter-material,



(4) monitoring the resistance to flow of cations from the melt to the counter-material through said membrane, and

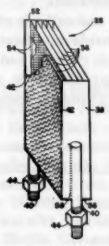
(5) continuing to add said metal M′ to the melt until an abrupt, non-transient increase in said resistance occurs.

4,225,396

VANADIUM AND URANIUM OXIDATION BY CONTROLLED POTENTIAL ELECTROLYSIS

Paul R. Graham, Edmond, and Olen L. Riggs, Jr., Bethany, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Oct. 10, 1978, Ser. No. 949,976
Int. Cl.[2] C25C *1/22*
U.S. Cl. 204—1.5 **10 Claims**



1. An electrolytic cell for controlled potential electrolysis adapted to contain an anolyte and a catholyte which comprises:

a tank having a closed bottom and an open top;

a plurality of high surface area anodes disposed in said tank and secured to said tank in spaced apart, substantially parallel relationship with respect to one another;

a plurality of vertically positioned, substantially parallel, high surface area cathodes disposed and secured in said tank and said cathodes being spaced apart to receive an anode between each adjacent pair of cathodes;

a plurality of vertically positioned, substantially parallel, ion exchange membranes disposed in said tank, said ion exchange membranes being spaced apart to receive alternately anodes and cathodes between each adjacent pair of ion exchange membranes to thereby form separate compartments;

a reference electrode disposed in said tank to provide a potential voltage measurement within a compartment;

said cell being provided with inlet means for introducing anolyte and catholyte into the separate compartments containing anodes and cathodes respectively and exit means for removing said anolyte and catholyte therefrom.

7. A process for the controlled potential oxidation of a metal contaminant in an acid solution comprising:

providing an anolyte comprising the acid solution having a reference electrode and an anode therein;

providing a catholyte having a cathode therein;

separating the anolyte and the catholyte by an ion exchange membrane which contacts the anolyte and catholyte on opposing surfaces;

providing an adjustable voltage electrical power source;

connecting the power source to the anode and cathode;

providing a potential monitoring means adapted to measure a potential between the reference electrode and the anode;

continuously monitoring the potential between the reference electrode and the anode; and

applying a voltage to the anode from the electrical power source, said voltage being sufficient to maintain a predetermined potential between the reference electrode and the anode whereby the metal contaminant in the acid solution is oxidized.

4,225,397

NEW AND UNIQUE ALUMINUM PLATING METHOD

Garrett H. Napier, Erie, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1978, Ser. No. 957,787
Int. Cl.[3] C25D *5/30*
U.S. Cl. 204—29 **11 Claims**

1. A method of plating at least one designated surface of an aluminum alloy article, comprising:

(a) selecting said aluminum alloy article to contain 1–8% zinc,

(b) cleaning said surface to be free of grease and/or organic contaminants,

(c) cathodically cleaning said surface to be free of any oxide film,

(d) while in the substantially oxide free condition, subjecting said surface to electrolysis in an electrolytic cell having an electrolyte containing a soluble cyanide and having a pH of 9–10.5 in a manner to leave a cyanide salt coating said surface after removal from said electrolyte,

(e) within one hour after exposure of said surface to the atmosphere after step (d), immersing said article in an electrolytic cell arranged to displace said salt coating with an electrolytic bronze coating, and

(f) electrolytically depositing a lustrous decorative coating system thereover.

4,225,398

METHOD OF IMPROVING THE CORROSION RESISTANCE OF AN ANODICALLY OXIDIZED SURFACE FILM ON ALUMINUM ARTICLES

Mutsuo Hasegawa, Uozu; Hatsuo Hirono, Nyuzen; Katsuyuki Nagata, Uozu; Shinji Hayashi, Toyama, and Hiroshi Yamagata, Kurobe, all of Japan, assignors to Yoshida Kogyo K.K., Japan

Filed Mar. 23, 1978, Ser. No. 889,443
Claims priority, application Japan, Mar. 30, 1977, 52-34735; Mar. 30, 1977, 52-34736; Mar. 30, 1977, 52-34737
Int. Cl.[2] C25D *11/18, 11/20, 11/22*
U.S. Cl. 204—33 **8 Claims**

1. A method of providing a coating film onto an oxide film on a surface of an anodically oxidized aluminum article, comprising, in combination, the seqential steps of:

(a) subjecting an aluminum article having an anodically oxidized surface film to a sealing treatment of any micropores in said surface film by contacting said aluminum

article with an aqueous sealing liquid at a temperature of at least 80° C. containing therein an amount in the range of about 0.03 to 30 g/liters of siliceous material selected from the group consisting of silicic acid, a silicate and mixtures thereof at least dispersible in an aqueous liquid, said contacting occurring over a time interval ranging from about 2 to 20 minutes;

(b) subjecting the so-sealed aluminum article to a secondary sealing treatment selected from the group consisting of contacting said aluminum article to pressurized steam, contacting said aluminum article to boiling water and contacting said aluminium article with a secondary sealing liquid containing a chemical selected from the group consisting of a nickel salt, a molybdenum salt, a phosphate salt, a bichromate salt and mixtures thereof; and

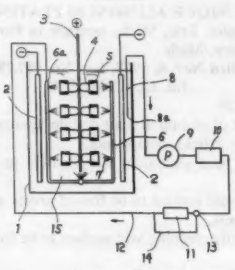
(c) coating the thus-treated aluminum article with a coating composition chemically different from said liquids of steps (a) and (b) and curing the so-applied coating composition at a temperature of at least 180° C.

4,225,399

HIGH SPEED ALUMINUM ANODIZING

Setsuo Tomita, No. 1-2 Fukamizo-Ohzara, Kohda-gun, Aichiken, Japan

Filed Apr. 25, 1979, Ser. No. 33,173
Int. Cl.³ C25D *11/06*
U.S. Cl. 204—58 **10 Claims**



1. A method for anodizing the surface of an aluminum or aluminum alloy substrate which comprises conducting the anodizing in an aqueous electrolyte bath containing sulfuric acid in a concentration of from 20% to 30% by weight at a substantially constant and uniform bath temperature and at a current density in excess of 1.5 A/dm², the anodizing being conducted with a forced circulation of electrolyte which directly impinges the article to be treated after being cooled sufficiently to maintain a constant and uniform bath temperature.

4,225,400

METHOD OF BONDING CATION EXCHANGE MEMBRANE OF FLUORINATED POLYMER

Tomoki Gunjima, and Isamu Takeshita, both of Yokohama, Japan, assignors to Asahi Glass Company, Limited, Tokyo, Japan

Division of Ser. No. 907,202, May 18, 1978. This application Feb. 28, 1979, Ser. No. 15,917
Claims priority, application Japan, May 24, 1977, 52-59345
Int. Cl.² C25B *1/34, 13/08*
U.S. Cl. 204—98 **9 Claims**

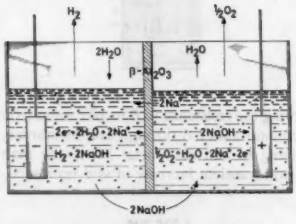
1. In a method for melt bonding a cation exchange membrane, wherein the viscosity of the molten membrane is controlled to within the ring of 10^2 to 10^6 poise in order to affect bonding, which comprises a fluorinated copolymer containing $(COO)_mX$ groups as the ion exchange groups, wherein X is an alkali metal, alkaline earth metal or $NHR_1R_2R_3$ wherein R_1, R_2 and R_3 represent hydrogen or a lower alkyl group and m is the valence of X, the improvement which comprises converting said $(COO)_mX$ groups to —COOY groups prior to melt bonding, wherein Y represents a C_1–C_{20} alkyl group.

4,225,401

METHOD FOR GENERATING HYDROGEN AND OXYGEN

Jiri Divisek, and Jürgen Mergel, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,334
Int. Cl.² C25B *1/04, 1/10*
U.S. Cl. 204—129 **7 Claims**



1. A method of generating hydrogen and oxygen by electrolytic decomposition of water in an electrolysis cell having an anode chamber and a cathode chamber provided with electrodes for applying a decomposition voltage, which method comprises in combination the steps of:

adding to said cell a molten alkali ion containing electrolyte having a high OH^- ion activity;

introducing water to said cell;

separating said anode and cathode chambers by an ion conducting aluminum oxide modification known as β-Al_2O_3,

applying an electrolysis current, and

separately withdrawing hydrogen and oxygen from said cathode and anode chambers respectively.

4,225,402

METHOD FOR HEAVY-WATER EXTRACTION FROM NON-ELECTROLYTIC HYDROGEN STREAMS USING A COMBINED ELECTROLYSIS AND CATALYTIC EXCHANGE SYSTEM

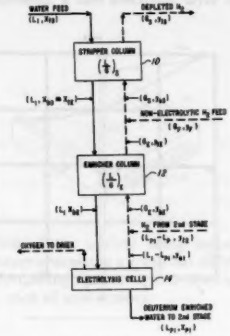
Rodney L. LeRoy, Pointe Claire; Martin Hammerli, and John P. Butler, both of Deep River, all of Canada, assignors to Noranda Mines Limited and The Electrolyser Corporation Ltd., both of Toronto, Canada

Filed Mar. 16, 1979, Ser. No. 21,306
Claims priority, application Canada, Mar. 30, 1978, 300034
Int. Cl.² C25B *1/04*
U.S. Cl. 204—129 **7 Claims**

1. A method for heavy-water extraction from non-electrolytic hydrogen streams using a combined electrolysis and catalytic exchange heavy-water process, comprising:

(a) contacting feed water in a catalyst column with hydrogen gas originating partly from said non-electrolytic hydrogen stream and partly from an electrolyte hydrogen

stream so as to enrich the feed water with deuterium present in the hydrogen gas; and



(b) passing the enriched feed water to an electrolyser wherein the electrolytic hydrogen gas is generated and then fed through the catalyst column.

4,225,403

PROCESS FOR IMPROVING FILMS OF POLY(p-METHYLSTYRENE) AND COPOLYMERS THEREOF BY HIGH ENERGY RADIATION TREATMENTS

Harold A. Arbit, Highland Park, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,639
Int. Cl.[2] C08F *2/46, 8/00*
U.S. Cl. 204—159.14 **5 Claims**

1. A method for improving properties of thermoplastic films that comprises irradiating films of poly (p-methylstyrene), of p-methylstyrene copolymers with acrylonitrile, or of high impact poly (p-methylstyrene) with ionizing radiation at a dosage between about 30 megarads and about 70 megarads, whereby said films are heat resistant and have increased tensile properties at elevated temperatures.

4,225,404

PERFLUOROOLEFIN AND PERFLUOROPARAFFIN MIXTURE AND PROCESS FOR MAKING SAME

Peter Dietrich; Günter Engler, both of Berlin; Armin Ferse, Dresden, all of German Democratic Rep.; Harald Grimm, deceased, late of Dresden, German Democratic Rep. (by Ingrid A. Grimm, heiress); Udo Gross, Berlin, German Democratic Rep.; Dietmar Handte, Rupperdorf, German Democratic Rep.; Klaus Lunkwitz, Dresden, German Democratic Rep.; Ulrich Müller, Berlin, German Democratic Rep.; Dietrich Prescher, Berlin, German Democratic Rep., and Jürgen Schulze, Berlin, German Democratic Rep., assignors to Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Filed Aug. 24, 1978, Ser. No. 912,038
Int. Cl.[2] B01J *1/10*; C07C *21/18*
U.S. Cl. 204—163 R **11 Claims**

1. Straight chain perfluoroolefin compounds of medium chain length having terminal double bonds and only a minor proportion of trifluoromethyl side chains per se or in admixture with perfluoroparaffins of equal chain length and corresponding structure, the perfluoroolefin compounds being present in such mixture in an amount of from 40 to 70%.

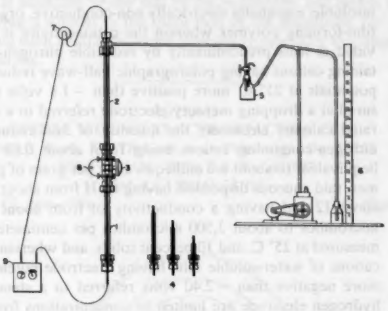
3. A process for making straight chain perfluoroolefin compounds of medium chain length having terminal double bonds and only a minor proportion of trifluoromethyl side chains per se or in admixture with perfluoroparaffins of equal chain length and corresponding structure, the perfluoroolefin compounds being present in such mixture in an amount of from 40 to 70% which comprises subjecting a highly fluorinated organic compound to degradation by means of a high energy radiation of a density of 0.3 to 3.0 W/cm^2 in a radiation chamber which has been subjected to a preceding rinsing with an inert gas or with a monomeric highly fluorinated organic compound.

4,225,405

PROCESS FOR SEPARATION AND COLLECTION OF VIABLE FEMALE AND MALE SPERMATOZOA

Rommom L. Lawson, P.O. Box 2111, Lubbock, Tex. 79408

Continuation-in-part of Ser. No. 805,869, Jun. 13, 1977, abandoned. This application Aug. 16, 1978, Ser. No. 933,988
Int. Cl.[2] G01N *27/26*
U.S. Cl. 204—180 R **8 Claims**



1. A process for separating and collecting viable female spermatozoa (XX chromosome) and male spermatozoa (XY chromosome) in a semen sample, which process comprises subjecting the semen sample to negative pressure to cause the male spermatozoa to move to the top of the sample, wherein the semen sample is brought into contact with a semen extender material, the semen extender material being disposed in surmounting relation to the sample, the male spermatozoa migrating into the semen extender material on subjection of the sample and the semen extender material to negative pressure.

4,225,406

CATIONIC DEPOSITION OF POLYMERS ONTO A CONDUCTIVE SURFACE

Earl H. Wagener; Ritchie A. Wessling, and Dale S. Gibbs, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 128,533, Mar. 26, 1971, abandoned, which is a continuation-in-part of Ser. No. 93,916, Nov. 30, 1970, abandoned. This application Jun. 16, 1975, Ser. No. 587,472
Int. Cl.[2] C25D *13/06*
U.S. Cl. 204—181 C **18 Claims**

14. A process for applying a thin, smooth, uniform coating on an electroconductive article in an electrophoretic cell comprising a coating bath containing an aqueous dispersion of polymer having a pH in the range from about 2 to about 12, an anode, and a cathode having a surface to be coated, said process comprising connecting said anode and said cathode to a source of electromotive potential, applying said potential across said anode and said cathode to pass an electric current through the dispersion and thereby to electrodeposit a coating of polymer on said cathode surface, said aqueous dispersion comprising dispersed cation-active particles of a water-insoluble, essentially electrically non-conductive, film-forming, organic polymer wherein the cation-activity is provided at least predominantly by a sulfonium cation; said electric current autogenously stopping or becoming very low when the article is coated.

4,225,407

CATHODIC ELECTRODEPOSITION OF POLYMERS ONTO A CONDUCTIVE SURFACE

Earl H. Wagener, Concord, Calif.; Ritchie A. Wessling, and Dale S. Gibbs, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 569,715, Apr. 21, 1975, abandoned, which is a continuation-in-part of Ser. No. 392,699, Aug. 29, 1973, abandoned. This application Apr. 4, 1979, Ser. No. 26,720

Int. Cl.³ C25D *13/06, 13/10*

U.S. Cl. 204—181 C **15 Claims**

1. A method for applying an adherent, hydrophobic, smooth, uniform coating to an object having an electroconductive surface comprising:

(1) immersing the object in a coating bath comprising an aqueous dispersion of cationactive particles of water-insoluble, essentially electrically non-conductive, organic, film-forming polymer wherein the cationactivity is provided at least predominantly by reducible nitrogen-containing cations having polarographic half-wave reduction potentials at 25° C. more positive than −1.8 volts measured at a dropping mercury electrode referred to a saturated calomel electrode; the quantity of said reducible nitrogen-containing cations being from about 0.02 milliequivalent to about 0.6 milliequivalent per gram of polymer; said aqueous dispersion having a pH from about 2 to about 12 and having a conductivity of from about 300 micromhos to about 3,500 micromhos per centimeter as measured at 25° C. and 10 percent solids; and wherein any cations of water-soluble salts having electrode potentials more negative than −2.40 volts referred to a standard hydrogen electrode are limited to concentrations from 0 to less than 0.002 normal;

(2) passing an electric current through said bath sufficient to effect deposition of a coating of said polymer on the object by providing a difference of electrical potential of from about 100 volts to about 5,000 volts between the object and an electrode that is

(a) spaced apart from said object;

(b) in electrical contact with said bath; and

(c) electrically positive in relation to said object; said coating which is deposited continuing to be adherent in the presence of water after the difference of electrical potential is discontinued; with the proviso that when the potential is applied for short, intermittent times, the potential is from about 200 volts to about 5,000 volts.

4,225,408

PROCESS FOR ELECTROLYTICALLY PREPARING A SEMICONDUCTING FILM ON A FLEXIBLE SUBSTRATE

William A. Barlow; Maurice Rhodes; Francis R. Sherliker, and Edward W. Williams, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 795,303, May 9, 1977, abandoned. This application Apr. 18, 1979, Ser. No. 31,874

Claims priority, application United Kingdom, May 17, 1976, 20199/76

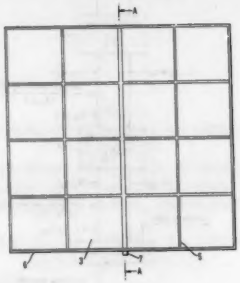
Int. Cl.² C25D *13/04, 13/16;* **H01L** *31/00, 7/00*

U.S. Cl. 204—181 N **32 Claims**

1. A method for the preparation of a substantially pin-hole-free film of thickness less than 5000 nm of a semiconducting sulphide, sulphoselenide, selenide or telluride which method comprises

(a) preparation of the semiconductor by a metathetical reaction in water or in a mixture of water and at least one water-miscible polar organic liquid, the semiconductor being prepared in the form of a colloidal suspension of colloidal particles having an average diameter between 1 and 100 nm,

(b) where the preparation is effected in water, addition of at least one water-miscible polar organic liquid to the colloidal suspension,



(c) electrophoresis of the colloidal suspension to deposit the colloidal particles on a surface of a substrate, said substrate being supported on a carrier which is flexible.

4,225,409

METALLIC MODIFIED MATERIAL OF INTERMETALLIC COMPOUND AND A PROCESS FOR THE PRODUCTION OF THE SAME

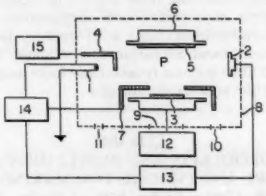
Shigeru Minomura, 2-10-6, Sakura, Setagaya-ku, Tokyo, 156, Japan

Division of Ser. No. 886,581, Mar. 14, 1978. This application Oct. 24, 1978, Ser. No. 954,172

Claims priority, application Japan, Mar. 14, 1977, 52/27095

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 S **6 Claims**



1. A process for the production of a metallic modified material of InSb or alloys thereof, which comprises providing a target consisting of an intermetallic compound semiconductor comprising In and Sb, said target having a zincblende-type or wurtzite-type crystalline structure, and sputtering said target to deposit a metallic modified material of InSb or alloys thereof with a rocksalt-type crystalline structure and the same chemical composition as the target on a substrate by tetrode sputtering with an anode voltage of at least around 60 V.

4,225,410

INTEGRATED ARRAY OF ELECTROCHEMICAL SENSORS

Salvatore J. Pace, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

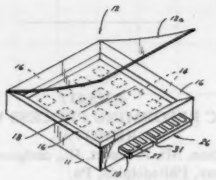
Filed Dec. 4, 1978, Ser. No. 966,171

Int. Cl.² G01N *27/30, 31/14*

U.S. Cl. 204—195 R **5 Claims**

1. An article of manufacture used for analyzing a multiplicity of analytes in a fluid sample, said article comprising an array of discrete, electrically isolated electrochemical sensors supported on a common substrate for analyzing different ones of said analytes, at least one of said sensors in said array having a

built in calibrating means including means to establish a differential concentration of an analyte within said one sensor during measurement comprising, a first electrode layer containing a given concentration of the analyte being measured, and a second electrode layer containing a given but different concentration of the analyte being measured, and electrical means to provide access to each of said sensors.



4,225,411

SUPPORT FRAME FOR ELECTROLYTE CHAMBERS IN ELECTROCHEMICAL CELLS

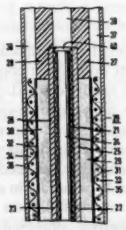
Horst Grüne, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 1, 1977, Ser. No. 856,491

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1976, 2656083

Int. Cl.[2] C25B *11/00*; H01M *8/02*

U.S. Cl. 204—286 **6 Claims**



1. In an electrode assembly including powder electrodes and a support frame therefor, said support frame being for use in an electrolyte chamber in an electrochemical cell, said support frame including flow passages for an electrolyte liquid, the improvement comprising:

the support frame comprising two thin porous boundary regions and a plurality of spaced parallel cross pieces disposed between said boundary regions, said cross pieces extending in the flow direction of the electrolytic liquid, for establishing flow passages in said support frame which are substantially free of constrictions in the flow direction, said support frame arranged between said powder electrodes, supporting and spacing said electrodes while at the same time conducting said electrolyte liquid.

4,225,412

APPARATUS FOR SEPARATING NEUTRAL MOLECULES USING A BIPOLAR MEMBRANE AS A MOLECULAR SIEVE

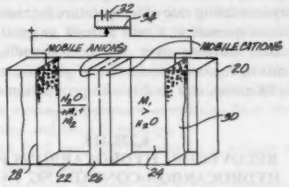
Howard Reiss, La Jolla, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Dec. 4, 1978, Ser. No. 966,196

Int. Cl.[3] C25B *13/02*

U.S. Cl. 204—301 **3 Claims**

1. A molecular separator with electrically adjustable controlled selectivity for separating a neutral molecule from solution comprising: a porous bipolar membrane of an elastomeric material, means for applying an electric field across the membrane, means for adjusting the porosity of such bipolar membrane which comprises means for varying the magnitude of the electric field, means for applying a solution containing such neutral molecule to one side of the membrane, and means for applying a solvent to the other side of the membrane for receiving such neutral molecule selectively passed by the bipolar membrane.



4,225,413

SPIRAL WOUND ELECTRODIALYSIS CELL

William S. Karn, 518 Dickson Ave., Pittsburgh, Pa. 15202

Filed May 24, 1979, Ser. No. 41,937

Int. Cl.[2] B01D *13/02*

U.S. Cl. 204—301 **11 Claims**

1. An assembly of two ion permeable membrane composites, each of said composites having an integral margin frame boundary region completely bordering the ion permeable region of said membrane composite, said integral margin frame boundary region having flow port connectors giving fluid access to faces of said membranes, said flow port connectors being joined to and passing thru said boundary region, said boundary region of one membrane composite being joined to the boundary region of a second membrane composite so as to form a closed pouch with openings only via said flow port connectors, said pouch being spiral wound about itself wherein the improvement comprises that said boundary region is a thermoplastic film material, that said boundary region is heat sealed to said flow port connectors, and that said boundary region is heat sealed to said second membrane composite boundary region completely around the periphery of said membrane composites.

4,225,414

PROCESS FOR HYDROCRACKING CARBONACEOUS MATERIAL TO PROVIDE FUELS OR CHEMICAL FEED STOCK

Dennis A. Duncan, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,258

Int. Cl.[2] C10G *1/06*; C07C *15/08, 3/58*

U.S. Cl. 208—8 R **3 Claims**

1. A method of hydrocracking particulate coal entrained in

a flow of hydrogen-containing gas having a hydrogen partial pressure of 1000–2000 psig to produce benzene, toluene, xylenes, ethylbenzene, phenols and cresols, comprising heating said entrained flow from about 800° F. to a maximum hydrocracking temperature in the range of 1400°–1600° F. at a continuously increasing rate of temperature increase followed by a temperature quench at a rate at least as great as the rate of temperature increase over the corresponding temperature increments to enhance production of phenols, cresols, xylenes, and ethylbenzene, and to diminish production of benzene.

4,225,415

RECOVERING HYDROCARBONS FROM HYDROCARBON-CONTAINING VAPORS

Zia I. Mirza, La Verne; Everett W. Knell, Los Alamitos, and Bruce L. Winter, Danville, all of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation of Ser. No. 926,281, Jul. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 700,010, Jun. 25, 1976, abandoned. This application Aug. 10, 1979, Ser. No. 65,736

Int. Cl.[3] **C10G** *1/00, 5/06;* **B01D** *5/00*

U.S. Cl. 208—8 R **84 Claims**

1. A process for recovery of values from hydrocarbon-containing vapors which comprises the steps of:

(a) contacting hydrocarbon-containing vapors which are at a temperature of at least 700° F. in a quench zone with a quench liquid consisting essentially of hydrocarbons, said quench liquid having a temperature sufficiently low to form a condensate and a vapor residue from the hydrocarbon-containing vapors, the condensate and quench liquid forming a combined liquid stream;

(b) mixing a viscosity-lowering liquid comprising hydrocarbons with said combined liquid stream to form a mixed liquid, said viscosity-lowering liquid having a viscosity lower than the viscosity of said mixed liquid, and said mixed liquid having a viscosity lower than the viscosity of said combined liquid stream;

(c) cooling a first portion of said mixed liquid to form said quench liquid and recycling said cooled first portion of said mixed liquid to the quench zone for contacting said hydrocarbon-containing vapors;

(d) separating a second portion of said mixed liquid into at least a viscosity-lowering liquid and a high boiling hydrocarbon fraction having a higher volume average boiling point than the volume average boiling point of said viscosity-lowering liquid;

(e) mixing at least a portion of the viscosity-lowering liquid separated from the second portion of said mixed liquid with said combined liquid stream; and

(f) recovering said high boiling hydrocarbon fraction.

4,225,416

PROCESS FOR THE PRODUCTION OF HIGH QUALITY CARBON BLACK FORMING MATERIAL

Lothar Rothbühr, Hermülheim; Werner Sroka, Brühl, and Walter Fritz, Seelscheid, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 735,888, Oct. 26, 1976, Pat. No. 4,154,808. This application Nov. 20, 1978, Ser. No. 962,187

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1975, 2547679

Int. Cl.[3] **C10C** *3/08*

U.S. Cl. 208—23 **44 Claims**

1. A process of producing a high quality carbon black forming material convertible with high yield into furnace black having a high abrasion resistance in rubber compositions consisting essentially of dissolving aromatic pitch in a thin liquid hydrocarbon carbon black feedstock having a viscosity at 100° C. of 5 to 30 cp, there being present suspended matter in the mixture thus formed, mechanically separating suspended matter from the mixture obtained and recovering the pitch containing feedstock having a viscosity at 100° C. of 40 to 300 cp.

4,225,417

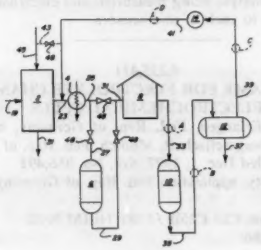
CATALYTIC REFORMING PROCESS WITH SULFUR REMOVAL

Thomas J. Nelson, Mt. Prospect, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Feb. 5, 1979, Ser. No. 9,001

Int. Cl.[2] **C10G** *25/00, 23/02*

U.S. Cl. 208—89 **22 Claims**



1. A reforming process for a hydrocarbon material containing a sulfur component comprises: contacting in a fixed bed sulfur removal zone at sulfur removal conditions, said hydrocarbon material with a manganese-containing composition which comprises a manganese component cabable of removing at least a portion of said sulfur component at said sulfur removal conditions to produce a reduced sulfur-containing hydrocarbon feedstock, and contacting in a reforming zone in the presence of hydrogen at hydrocarbon reforming conditions said feedstock with a catalyst comprising a minor catalytically effective amount of a platinum-group metal component and a minor catalytically effective amount of a halogen component capable of reforming said feedstock at such reforming conditions to produce a reformed product.

4,225,418

HYDROPROCESSING OF HYDROCARBONS

Lee Hilfman, Mount Prospect, Ill., assignor to UOP Inc., Des Plains, Ill.

Division of Ser. No. 970,781, Dec. 18, 1978, Pat. No. 4,175,033, which is a continuation-in-part of Ser. No. 810,323, Jun. 27, 1977, Pat. No. 4,148,759, which is a continuation-in-part of Ser. No. 684,055, May 6, 1976, abandoned. This application Jun. 7, 1979, Ser. No. 46,731

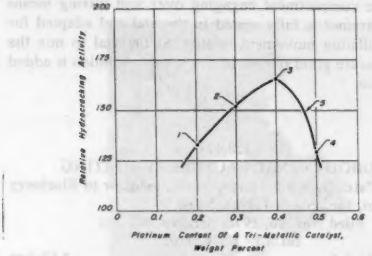
The portion of the term of this patent subsequent to Oct. 2, 1996, has been disclaimed.

Int. Cl.[2] **C10G** *13/02;* **B01J** *29/12;* **C10G** *13/10*

U.S. Cl. 208—111 **6 Claims**

1. A process for hydrocracking a hydrocarbonaceous charge stock into lower molecular weight hydrocarbons, which process comprises reacting said charge stock with hydrogen at hydrocracking conditions, and in contact with a catalyst composite comprising a combination of a nickel component, a molybdenum component and a platinum component with a

zeolitic carrier material wherein said platinum component is present in an amount sufficient to result in the composite containing, on an elemental basis, about 0.2 to about 0.5 percent by weight platinum.



4,225,419
ALUMINA ISOMERIZATION PROCESS

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

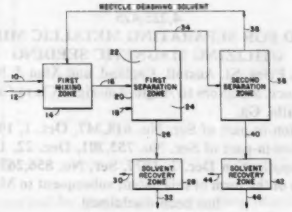
Filed Apr. 18, 1979, Ser. No. 30,982
Int. Cl.[3] C10G 35/06, 63/04; C07C 5/27; B01J 21/20
U.S. Cl. 208—135 20 Claims

5. In a process for the isomerization of an olefin-containing feedstream using an isomerization catalyst consisting essentially of alumina having a surface area of at least about 100 m^2/g wherein one isomerization run is followed by catalyst regeneration and then an additional isomerization run, the improvement which comprises carrying out said regeneration by heating said catalyst at a temperature in the range of about 425° C. to about 705° C. in the presence of a free oxygen-containing gas containing about 0.3 to about 10 mole percent water based on the moles of free oxygen-containing gas for a time sufficient to burn off substantially all the coke on said catalyst.

4,225,420
PROCESS FOR IMPROVING SOLUBLE COAL YIELD IN A COAL DEASHING PROCESS

Donald E. Rhodes, Oklahoma City, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Jun. 27, 1979, Ser. No. 52,611
Int. Cl.[3] C10G 1/04, 29/20
U.S. Cl. 208—177 10 Claims



1. A process comprising:

providing a hydrocarbonaceous feed comprising soluble coal products and insoluble coal products;

providing a deashing solvent consisting essentially of at least one substance having a critical temperature below 800 degrees F. selected from the group consisting of aromatic hydrocarbons having a single benzene nucleus and normal boiling points below about 310 degrees F., monocyclic aromatic hydrocarbons having normal boiling points below about 310 degrees F., cycloparaffin hydrocarbons having normal boiling points below about 310 degrees F., nonaromatic monocyclic hydrocarbons having normal boiling points below about 310 degrees F., open chain mono-olefin hydrocarbons having normal boiling points below about 310 degrees F., open chain saturated hydrocarbons having normal boiling points below about 310 degrees F., mono-, di, and tri-open chain amines containing from about 2–8 carbon atoms, carbocyclic amines having a monocyclic structure containing from about 6–9 carbon atoms, heterocyclic amines containing from about 5–9 carbon atoms, and phenols containing from about 6–9 carbon atoms and their homologs;

admixing said feed and said solvent in a mixing zone to provide a feed mixture;

introducing said feed mixture into a first separation zone maintained at an elevated temperature and pressure to effect a separation of said feed mixture into a fluid-like first light phase comprising soluble coal products and deashing solvent and a fluid-like substantially nonflowable first heavy phase comprising insoluble coal products, some soluble coal products and some deashing solvent;

introducing an additional quantity of deashing solvent into said first heavy phase to impart flowability to said first heavy phase;

withdrawing the first light phase from the first separation zone; and

withdrawing the first heavy phase from the first separation zone.

4,225,421
PROCESS FOR HYDROTREATING HEAVY HYDROCARBONS

Albert L. Hensley, Jr., Munster, Ind., and Leonard M. Quick, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 13, 1979, Ser. No. 20,072
Int. Cl.[3] C10G 45/04, 49/04
U.S. Cl. 208—216 PP 46 Claims

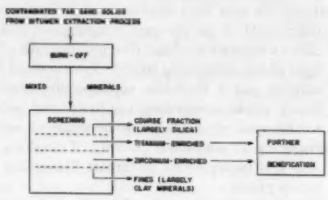
1. A process for the hydrodemetallation and hydrodesulfurization of hydrocarbon feedstock containing asphaltenes and metals, said feedstock comprising at least one member selected from the group consisting of crude oil, topped crude oil, petroleum hydrocarbon residua, oils obtained from tar sands, and residua derived from tar sands oil, which process comprises contacting said hydrocarbon feedstock with hydrogen and a bimodal catalyst consisting essentially of at least one active original hydrogenation metal selected from Group VIB deposited on a support comprising alumina, said Group VIB metal being in at least one form selected from the group consisting of the elemental form, the oxide, and the sulfide, said catalyst having a surface area within the range of about 140 to about 300 m^2/gm, a total pore volume based upon measurement by mercury penetration within the range of about 0.4 cc/gm to about 1.0 cc/gm, and comprising about 60% to about 95% of its micropore volume in micropores having diameters within the range of about 50 Å to about 200 Å, 0% to about 15% of its micropore volume in pores having diameters within the range of about 200 Å to about 600 Å and about 3% to about 30% of said total pore volume in macropores having diameters of 600 Å or greater.

4,225,422

BENEFICIATION OF HEAVY MINERALS FROM BITUMINOUS SANDS RESIDUES BY DRY SCREENING

Lloyd Trevoy, and Alvin Maskwa, both of Edmonton, Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; PanCanadian Petroleum Limited, Calgary; Esso Resources Canada Ltd., Calgary; Canada-Cities Service, Ltd., Calgary and Gulf Canada Resources Inc., Calgary, all of, Canada

Filed Sep. 17, 1979, Ser. No. 76,324
Int. Cl.[3] B07B *15/00*
U.S. Cl. 209—2 1 Claim



1. In a dry separator process for treating first stage scroll centrifuge tailings obtained from hot water extraction processing of bituminous sands, said tailings being dry and substantially carbon free, to concentrate the titanium-based and zirconium-based minerals therefrom, the improvement comprising:

screening said tailings in sieves of successively smaller screen opening to give

(a) a coarse matter product having more than 75% by weight of minerals of density less than 3.0

(b) a second product of less coarse matter having between 45% and 55% by weight of material of density greater than 3.0

(c) a third product of matter less coarse than in (b) but greater than 44 micron and containing more than 60% by weight of material of density greater than 3.0

(d) a fourth product of fine solids having passed through a sieve of 44 micron screen opening,

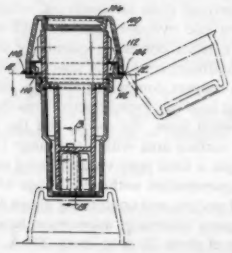
products (b) and (c) being thereafter advanceable to further beneficiation steps to concentrate titanium-based and zirconium-based minerals therefrom respectively.

4,225,423

OVA DETECTOR ASSEMBLY

John Cotey, 27 W. End Ave., Haddonfield, N.J. 08033

Filed May 9, 1979, Ser. No. 37,361
Int. Cl.[3] B03B *7/00*
U.S. Cl. 209—3 7 Claims



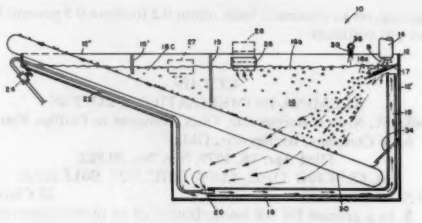
1. A device for use in examining fecal matter for presence of ova comprising a vial open at one end, mixing means in the base of said vial remote from said open end, an elongated hollow strainer including a cup-like compartment at one terminal end adapted to contain a predetermined quantity of feces, the cup-like compartment engaging over said mixing means when the strainer is fully seated in the vial and adapted for limited oscillating movement relative to the vial to mix the feces and ensure good release of ova when a solution is added to the device.

4,225,424

HYDRODYNAMIC BLUEBERRY SORTING

Albert W. Patzlaff, South Haven, Mich., assignor to Blueberry Equipment, Inc., South Haven, Mich.

Filed Nov. 20, 1978, Ser. No. 962,381
Int. Cl.[2] B07C *5/02*
U.S. Cl. 209—3.1 2 Claims



1. Blueberry sorting apparatus comprising:

a water bath vessel for receiving a harvested mixture of ripe and unripe blueberries; means for directing a downward current of water for entraining and immersing the mixture of ripe and unripe berries into the water bath in the vessel whereby air bubbles attenuated on the ripe berries are separated therefrom to allow ripe berries to sink further and unripe berries to rise and float; said vessel includes a berry entry zone and said water current directing means is arranged to propel water downwardly at said berry entry zone; said means for directing a downward current of water includes a diagonal deflector panel having an undersurface for directing the water current and a water outlet for causing a current of water to flow against said undersurface; and said panel having an upper surface for guiding the blueberries down to the water stream.

4,225,425

METHOD FOR SEPARATING METALLIC MINERALS UTILIZING MAGNETIC SEEDING

William M. Price, St. Austell, England, and Alan J. Nott, Huelgoat, France, assignors to Anglo-American Clays Corporation, Sandersville, Ga.

Continuation-in-part of Ser. No. 618,347, Oct. 1, 1975, and a continuation-in-part of Ser. No. 753,201, Dec. 22, 1976. This application Dec. 1, 1977, Ser. No. 856,267
The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.
Int. Cl.[2] B03B *1/04;* B03C *1/00*
U.S. Cl. 209—5 13 Claims

1. A method for magnetically separating an inorganic metal oxide of inherently low magnetic attractability from a gangue material containing same, comprising:

forming a dispersed aqueous slurry of said gangue material including said metal oxide;

mixing said slurry with a system of transiently suspended ferrimagnetic particles of predominantly colloidal size, said particles being further characterized by an isoelectric point within 2.0 units of that of the metal oxide sought to

be separated, such that said particles spontaneously coflocculate with said oxide to seed same; and

passing the resultant seeded slurry through a porous ferromagnetic matrix in the presence of a magnetic field, to separate said seeded metal oxide at said matrix.

4,225,426

MAGNETIC BENEFICIATION OF CLAYS UTILIZING MAGNETIC PARTICULATES

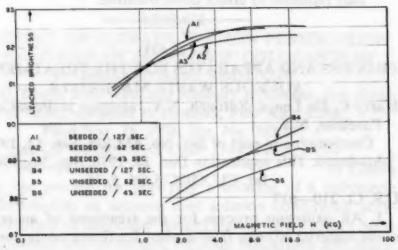
William M. Price, St. Austell, England, and Alan J. Nott, Huelgoat, France, assignors to Anglo-American Clays Corporation, Sandersville, Ga.

Continuation-in-part of Ser. No. 618,347, Oct. 1, 1975, Pat. No. 4,087,004, and a continuation-in-part of Ser. No. 753,201, Dec. 22, 1976, Pat. No. 4,125,640, and a continuation-in-part of Ser. No. 856,267, Dec. 1, 1977. This application Feb. 2, 1978, Ser. No. 874,427

The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.

Int. Cl.[2] B03B *1/04*

U.S. Cl. 209—5 **15 Claims**


A1 SEEDED / 127 SEC.
A2 SEEDED / 62 SEC.
A3 SEEDED / 43 SEC.
B4 UNSEEDED / 127 SEC.
B5 UNSEEDED / 62 SEC.
B6 UNSEEDED / 43 SEC.
MAGNETIC FIELD H (KG)

1. A method for magnetically separating titaniferous discolorants from a crude kaolin clay, comprising the steps of:

forming a dispersed aqueous slurry of said clay;

spontaneously coflocculating ferrimagnetic particles with said titaniferous impurities by seeding said slurry with a system of said particles, wherein said particles are predominantly sub-micron in size and comprise a magnetic ferrite of the general formula $MO.Fe_2O_3$, where M is a divalent metal ion; and

passing the resultant slurry through a porous ferromagnetic matrix in the presence of a magnetic field, to separate said coflocculated particles and impurities at said matrix.

4,225,427

SORTING APPARATUS FOR A STOCK SUSPENSION OBTAINED FROM WASTE PAPER

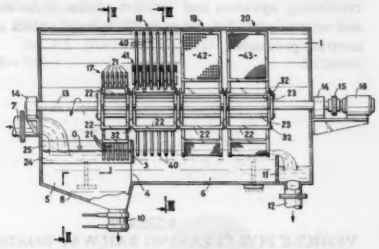
Hans Schnell, Mengen, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Wurttemberg, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,779

Claims priority, application Switzerland, Mar. 6, 1978, 2396/78

Int. Cl.[3] B07C *5/00*

U.S. Cl. 209—44.1 **5 Claims**



1. A sorting apparatus for stock suspensions obtained from waste paper, comprising:

infeed means for the stock suspension;

a separation container arranged at the region of said infeed means for receiving therein the infed stock suspension;

said separation container having a free liquid surface of the stock suspension and an inclined floor;

a delivery device for heavy particles arranged at the region of the lowermost point of said floor;

a removal device for the removal of floating substances which float upon the liquid surface in the separation container;

a separator container arranged after the separation container;

a partition wall having an opening disposed between said separation container and said subsequently arranged separator container;

said subsequently arranged separator container likewise having a free liquid surface of the stock suspension contained therein;

at least one removal device provided for the separator container for the removal of large surface particles suspended in the stock suspension;

the removal device for the suspended particles in the stock suspension and provided for the separator container comprises a rake device having tines movable through the liquid of said separator container;

a removal device provided with coarse-mesh sieve means arranged after the removal device having the tines and arranged in the separator container;

said separator container having a liquid compartment; and

said removal device provided with the coarse-mesh sieve means being movable through the liquid compartment of said separator container.

4,225,428

FROTH FLOTATION METHOD FOR RECOVERING METAL VALUES

Vojislav Petrovich, 1935 W. Schiller St., Chicago, Ill. 60622

Filed Jan. 22, 1979, Ser. No. 5,099

Int. Cl.[3] B03D *1/02*

U.S. Cl. 209—166 **1 Claim**

1. In concentrating by froth flotation of native silver and native copper, silver, copper, nickel, cobalt, and chromium ores, which includes subjecting a finely ground aqueous dispersion of said ores to froth flotation process in the presence of commercial quaternary ammonium chlorides or bases derived

from them, selected from the group consisting of tricaprylylmethyl ammonium chloride, or didecyldimethyl ammonium chloride, or methyltridecyl ammonium chloride and in the presence of perchloric acid, which acting in conjunction therewith form complexes at the surfaces of said mineral ores; the step of adding to said dispersion an amount of the order from 0.01 to 0.1 kg per ton of ore treated with said quaternary ammonium chlorides, and an amount of the order from 0.01 to 0.1 kg per ton of ore treated with perchloric acid, said aqueous dispersion of ore produces a float product of mineral values by continuing agitation and aeration of the aqueous dispersion, and separating and recovering the mineral values as float concentrate products.

4,225,429

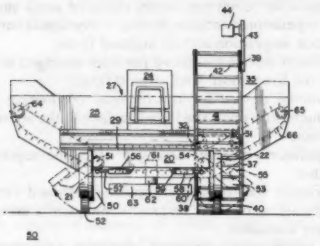
VEHICLE FOR CLEANING RAILWAY ROADBEDS OF MAGNETIC ARTICLES

John D. Holley, 3145 Rolling Rd., Montgomery, Ala. 36111

Filed Oct. 24, 1978, Ser. No. 954,103

Int. Cl.[2] B03C *1/00*

U.S. Cl. 209—215 **4 Claims**



3. A vehicle for collecting magnetic articles from a railroad roadbed having spaced railway rails comprising a chassis, wheels for said chassis for engaging said rails, a source of hydraulic fluid under pressure on said chassis, a main hydraulic motor connected to said source driving at least one of said wheels, a carriage mounted on said chassis, an endless conveyor of non-magnetic material at a side of said chassis, a pivot mounting said endless conveyor on said carriage, hydraulic piston and cylinder means energized by said source connected to said carriage and to said endless conveyor for raising and lowering said endless conveyor about said pivot with respect to the roadbed and also to said carriage and said chassis, said endless conveyor passing over a roller at an end adjacent the roadbed when in operating position, a plurality of permanent magnets in said roller, said endless conveyor discharging onto said vehicle a second hydraulic motor connected to said source for driving said endless conveyor at the same speed as said vehicle, a frame downwardly depending from each side of said chassis and pivotally mounted on said chassis, hydraulic means for swinging each of said frames from an upper to a lower position energized by said source, crawler means mounted on each of said frames and mechanical drive means connected to the at least one wheel for selectively driving the crawler means of the frame in lower position whereby when said vehicle is moved over said rails and said endless conveyor is lowered and actuated said magnets will draw magnetic articles from the roadbed onto said endless conveyor for movement to and discharge into said hopper.

4,225,430

BIOLOGICAL PROCESS

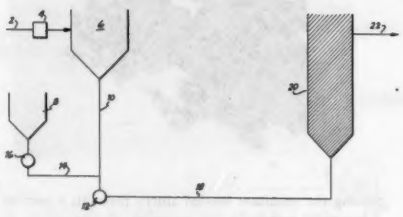
Johanna Bosman, Sandton, South Africa, assignor to AECI Limited, Johannesburg, South Africa

Continuation-in-part of Ser. No. 806,166, Jun. 13, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,624

Claims priority, application South Africa, Jun. 25, 1976, 76/3788

Int. Cl.[2] C02C *1/04*

U.S. Cl. 210—610 **14 Claims**



1. A method for denitrifying a high nitrogen content waste water effluent comprising

(i) passing a feed of said waste water effluent through a packed bed reactor containing denitrifying bacteria which are heterotrophic and facultative anaerobes on the packing material to denitrify said waste water effluent

wherein the feed has a pH of 6 to 7.5, a nitrate nitrogen concentration in excess of 1000 mg/l and ammonia nitrogen in excess of 1000 mg/l and is admixed with molasses, as a carbon source, in an amount sufficient to effect the denitrification of said waste water effluent; and

(ii) simultaneously and continuously passing a recycle stream which is a substantially denitrified stream of the waste water feed of (i) through the bed, in a volume such that the volume ratio of recycle stream to feed ranges from 2 to 200

wherein the volume and rate of recycle stream in (ii) are sufficient to effect a linear velocity of the combined feed and recycle stream through the bed ranging from 4 to 200 m^3/m^2 hr,

and to effect a hydraulic shear within the bed which continuously remove accumulated biomass which is in excess of that required to effect denitrification.

4,225,431

PROCESS AND APPARATUS FOR THE TREATMENT OF AQUEOUS WASTE MATERIALS

Harry C. De Longe, Katonah, N.Y., assignor to PepsiCo, Inc., Purchase, N.Y.

Continuation-in-part of Ser. No. 832,238, Sep. 12, 1977, abandoned. This application Dec. 28, 1978, Ser. No. 974,045

Int. Cl.[2] C02C *5/06, 5/10*

U.S. Cl. 210—617 **24 Claims**

1. An oxidation process for the treatment of an aqueous waste material effluent from a plant for filling containers with a beverage, comprising the steps of:

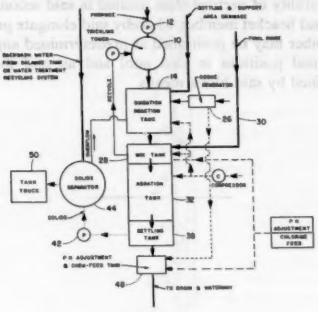
(a) passing an influent constituted of said aqueous waste material through a trickling element having a media therein having biological growth formed thereon to degrade BOD to form an aqueous waste material discharge stream;

(b) oxidizing light organic floc resulting from biological action in said trickling element and also any biomass sloughing off the trickling element media to further remove BOD by passing the aqueous waste material discharge stream from said trickling element into an oxidation-reaction tank, also conveying waste material from the beverage container filling plant into said oxidation-reaction tank, adding a flow of an oxygen-bearing gas to said

oxidation-reaction tank for enhancing the chemical oxidation of the thusly combined aqueous waste materials detained therein, and detaining said discharge stream in said oxidation-reaction tank for a predetermined time interval to provide chemical oxidation therein before discharging it in a stream;

(c) admixing the discharge stream from said oxidation-reaction tank and a final rinse waste effluent from the beverage filling plant with air to effect oxidation treatment of said aqueous waste material in a mixing tank before discharging it in a stream;

(d) conveying the discharge stream from said mixing tank into an aeration tank imparting a circuitous flow path to



the aqueous waste material therethrough while providing for aeration of the aqueous waste material, as through the imparted circuitous flow, and detaining said waste material in said aeration tank for a predetermined time interval before discharging it in a stream;

(e) separating the discharge stream from said aeration tank into a liquid portion and a waste solids-containing portion by passing it to a settling tank adapted to receive light organic floc from the preceding aeration process; and

(f) separately conveying a discharge stream containing said waste solids-containing portion from said settling tank to a solids separator and concurrently withdrawing the treated liquid portion of said effluent for removal from said process.

4,225,432

EFFICIENCY OF ULTRAFILTRATION PURIFICATION OF SOLUTIONS OF POLYMERIC COLORANTS BY INORGANIC BASE ADDITION

Robin G. Booth, Palo Alto, and Anthony R. Cooper, Los Altos, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Filed Nov. 18, 1976, Ser. No. 743,207

Int. Cl.[3] B01D *31/00*; C02F *1/44*; C09B *67/00*

U.S. Cl. 260—144 **18 Claims**

1. In the process for purifying a solution of a polymeric colorant wherein an aqueous feed solution comprising polymeric colorant of molecular weight above 1000 Daltons polymeric colorant and polymeric colorant precursors and degradation products and inorganic salts of molecular weight below 1000 Daltons is brought in contact with a semipermeable membrane under ultrafiltration conditions in a diafiltration mode for a plurality of diavolumes thereby forming an ultrafiltrate comprising polymeric colorant, polymeric colorant precursors and degradation products and inorganic salts of molecular weight below 1000 Daltons and a retentate comprising polymeric colorant of molecular weight above 1000 Daltons, the improvement which comprises maintaining the pH of the feed solution above pH 9.0 for at least 2 diavolumes by addition of base directly to said ultrafiltration feed, said ultrafiltration feed comprising at least 50% by weight water, and said base being only an alkali metal or alkaline earth metal inorganic base.

4,225,433

FILTRATION OF HOT WATER EXTRACTION PROCESS WHOLE TAILINGS

Joseph K. Liu, Edmonton; Stephen J. Lane, Calgary, and Lubomyr M. Cymbalisty, Edmonton, all of Canada, assignors to Petro-Canada Exploration Inc., Calgary; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity, Edmonton; Ontario Energy Corporation, Toronto; Imperial Oil Limited, Toronto; Canada-Cities Service, Ltd., Calgary and Gulf Oil Canada Limited, Toronto, all of, Canada

Filed Oct. 2, 1978, Ser. No. 947,996

Int. Cl.[3] B01D *21/01*; C02F *1/52*

U.S. Cl. 210—702 **3 Claims**

1. A method for treating combined whole tailings from a hot water extraction process plant, said tailings including water, and coarse and fine solids, which comprises:

mixing the whole tailings, without prior settling, with a flocculating agent to aggolmerate fine solids with coarse solids and co-settling the fine solids with the coarse solids; and

immediately thereafter vacuum filtering the entire product without a filter aid to separate the water and solids.

4,225,434

STORM OVERFLOW BASIN

Wilhelm Ernst, 4 Böcklerstrasse, 4600 Dortmund-Aplerbeck, and Hubert Ernst, 6, Am Dümel, 5780 Bestwig-Nuttlar, both of Fed. Rep. of Germany

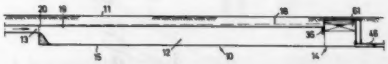
Filed Feb. 12, 1976, Ser. No. 657,462

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1975, 2506126; Jan. 31, 1976, 2603665

The portion of the term of this patent subsequent to Sep. 30, 1995, has been disclaimed.

Int. Cl.[3] B01D *21/24*

U.S. Cl. 210—98 **20 Claims**



17. A storm overflow system in a combined sewage system comprising at least one storage tank being disposed underground in said sewage system, a floor in said tank in the shape of a trough adapted to handle the dry weather flow of said sewage system and having steeply inclined side walls, a storm overflow basin having a predetermined capacity level following said tank and having an inlet from said tank, a sewage discharge and a storm overflow outlet comprising a fixed wier sill and a movable gate, said gate having a top and a bottom, said top of said gate being disposed above said overflow basin

capacity level in all positions, said bottom of said gate abutting said sill in the closed position, mounting means permitting displacement of said gate such that a discharge opening is formed between said bottom of said gate and said sill, and actuating means comprising a float in a float chamber integral to said storm overflow basin defined by a floor, side walls and a lowest side wall, said lowest side wall having a top at said storm overflow basin capacity level such that water may flow over said lowest side wall when said overflow basin capacity is exceeded, said float chamber having an emptying line, said float controlling said gate through said actuating means.

4,225,435

BLOCKING DEVICE FOR USE IN A SEWER MANHOLE

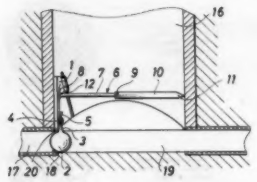
Knud Jensen, Gaerumvej 41, 99, 9900 Frederikshavn, Denmark

Filed May 8, 1978, Ser. No. 903,957

Claims priority, application United Kingdom, May 19, 1977, 21071/77

Int. Cl.[2] B01D *35/04*

U.S. Cl. 210—153 **4 Claims**



1. A blocking device for automatic blocking of the opening of an inlet pipe in a sewer manhole, comprising:

a supporting plate located above the opening of the inlet pipe;

a blocking body substantially freely pivotable from said supporting plate;

two displaceable and fixable rods, one located on each side of said plate and resting on the bottom of the sewer manhole to hold said plate above the inlet pipe opening; and

a tightening member adjustable in length, having one end secured to said supporting plate while the other end may be pressed against the wall of the manhole and locked into position holding said supporting plate against the wall of the manhole above the inlet pipe opening.

4,225,436

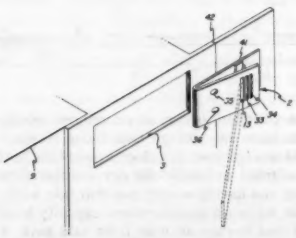
APPARATUS FOR SWIMMING POOL WATER SURFACE CLEANING

Laszlo Cseh, 5 Merritt Dr., Schenectady, N.Y. 12306

Filed Feb. 14, 1978, Ser. No. 877,681

Int. Cl.[2] E04H *3/16*

U.S. Cl. 210—169 **3 Claims**



1. In a swimming pool having at least one wall and a skimmer mechanism including a skimmer mouth and a water return port penetrating said wall, said skimmer mouth and water return port being interconnected by conduit and pumping means whereby a generally circular flow of water is maintained in said swimming pool, the improvement which comprises:

an elongate prismatical member;

bracket member mounting means attached to said pool for demountably securing said elongate prismatical member adjacent said skimmer mouth, said member having a first portion attached to said pool wall adjacent said skimmer mouth and a second portion extending horizontally and angularly from said wall into the interior of said pool, block means attached to said first portion of said bracket, a plurality of vertical slots located in said second portion of said bracket member whereby said elongate prismatical member may be positioned at predetermined angular and vertical positions in said pool and an end thereof restrained by said block means.

4,225,437

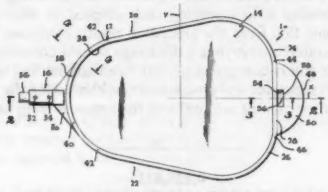
POOL SKIM NET WITH ROCK SCOOP

Randle C. Woodard, 20751 Prairie St., Chatsworth, Calif. 91311

Filed Apr. 30, 1979, Ser. No. 34,297

Int. Cl.[2] B01D *33/00*

U.S. Cl. 210—223 **10 Claims**



1. A skim net for swimming pools, comprising:

a polygonal frame having a rear end and a front end extending in parallelism with the transverse axis of said net and having a configuration tapering forwardly outwardly in direction away from said transverse axis;

a netting stretched within the confines of said frame and extending in the plane thereof;

a handle-attachment at said rear end of said frame; and structural means formed integrally with and extending outwardly from said forward end, the outwardly extending integral structural means being outwardly tapered and having a part-circular geometry, this outwardly tapered extension enabling scooping of solid materials off the swimming pool floor onto the net, said extension having an upper surface and a lower pool floor engaging surface, said upper surface having formed therein a recess directly adjacent the frame forward end and disposed in the plane of the longitudinal axis of said frame; and

magnetic means positioned within said recess and in a plane flush with said upper surface of said extension, said magnetic means being effective to magnetically attract metallic objects and remove same from the swimming pool floor.

4,225,438
SUPPORT MEMBER FOR USE WITH SEMIPERMEABLE MEMBRANE

Jimmy L. Miller, Waukegan, and William J. Schnell, Arlington Heights, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

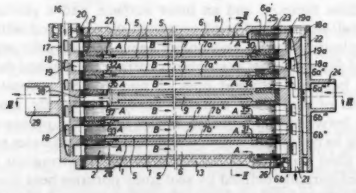
Continuation of Ser. No. 620,543, Oct. 8, 1975, abandoned. This application Sep. 16, 1977, Ser. No. 833,726
The portion of the term of this patent subsequent to Feb. 22, 1994, has been disclaimed.
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—321 B 11 Claims

1. A flexible support member for use in a coil dialyzer to support a tubularly shaped, semipermeable membrane, said support member comprising: an imperforate fluid impermeable web; means on both sides of said web defining a plurality of generally parallel, membrane engaging ribs for supporting said membrane and for maintaining said membrane in spaced relation to said web, said ribs on at least one side of said web including a plurality of first ribs spaced from each other and a plurality of second lower ribs, with at least one lower rib being positioned between each pair of adjacent first ribs, said first ribs and said lower ribs being arranged on at least one side of said web with at least said first ribs being configured to prevent ribs on the other side of said web from extending into spaces defined between said first ribs when said one side is positioned opposite the other side in supporting said membrane.

4,225,439
APPARATUS FOR SELECTIVE SEPARATION OF MATTER THROUGH SEMI-PERMEABLE MEMBRANES

Kurt Spranger, Ammerbuch-Entringen, Fed. Rep. of Germany, assignor to Gambro Dialysatoren GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,313
Claims priority, application Sweden, Oct. 17, 1977, 7711631
Int. Cl.[2] B01D *31/00*
U.S. Cl. 210—321 R 11 Claims



1. Apparatus for selectively separating matter between a first fluid and a second fluid through semi-permeable membranes, said apparatus comprising:

frame means defining first and second contact zones, each of said contact zones having a first end and a second end and being comprised of first and second contact chambers;

a plurality of tubular semi-permeable membranes disposed in each of said contact chambers, each of said tubular membranes having an inlet end and an outlet end and adapted to conduct at least a portion of said first fluid from said inlet end to said outlet end;

barrier means between said first contact zone and said second contact zone for preventing fluid communication therebetween;

fluid communication means in each of said contact zones for providing fluid communication between said first contact chamber and said second contact chamber of each of said contact zones so that the fluid in each of said contact zones flows substantially throughout both said first and second contact chambers of said contact zones around said plurality of tubular membranes therein, said fluid communication means including an intermediate flow chamber between said first and second contact chambers and said intermediate flow chamber communicating with said first contact chamber at said second end and with said second contact chamber at said first end;

inlet means for said second fluid for distributing said second fluid between said first and second contact zones and for introducing a portion of said second fluid into said first contact chamber of each of said contact zones at said first end thereof so that said portion of said second fluid introduced into said contact zone flows through each of said contact chambers in a direction from said first end to said second end and through said intermediate flow chamber in a direction from said second end to said first end;

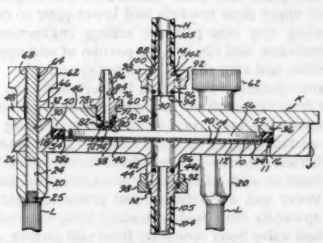
outlet means for withdrawing said second fluid from each of said contact zones after said second fluid has been conducted through said first and second contact zones; and

sealing means for sealing said plurality of tubular membranes from said contact chambers so that there is no contact between said first fluid and said second fluid.

4,225,440
FILTER HOLDING ASSEMBLY

Isadore Pitesky, 4001 Linden Ave., Long Beach, Calif. 90806

Filed Feb. 23, 1979, Ser. No. 14,733
Int. Cl.[2] B01D *27/08, 31/00*
U.S. Cl. 210—321 R 5 Claims



1. In combination with a resilient hose connected to a source of a fluid under substantial pressure that is to be filtered; a circular screen; a flat rim that extends around the periphery of said screen; a layer of porous material that covers said screen; a sheet of filtering membrane that is of substantially the same diameter as said rim and overlies the same; a resilient sealing ring of generally rectangular transverse cross section that rests on a peripheral section of said filtering membrane above said rim; a filter holder that so supports said screen, filtering membrane and sealing ring in such a manner that all fluid discharging from said filter holder must have passed through said filtering membrane, with said filter holder capable of being

assembled and taken apart for cleaning and the like without the use of hand tools, said filter holder including:

a. a lower, circular, horizontally positionable rigid plate that has upper and lower horizontal surfaces, at least three circumferentially spaced, transverse tapped bores that extend vertically through an outer peripheral portion of said lower plate, a centered cavity that extends downwardly in said lower plate from said upper surface to terminate in a flat horizontal bottom that includes a flat ring-shaped ledge and a plurality of spaced grooves within the confines of said ledge that communicate with a first downwardly extending vertical bore, and a first tubular boss that depends from said lower plate and communicates with said first bore, said cavity of slightly greater diameter than said rim to permit said rim to rest on said ledge, said filtering membrane to rest on said screen and overlie said rim, and said resilient sealing ring to rest on the peripheral portion of said filtering membrane directly above said rim;

b. a plurality of stud bolts that engage said tapped bores and have upper and lower portions that extend above and below said upper and lower horizontal surfaces;

c. a plurality of legs, each of said legs having an upper threaded end portion and a lower end;

d. a plurality of elongate hand tightenable nuts that removably engage said lower portion of said stud bolts and said upper threaded end portions of said legs to support said lower horizontal plate at an elevated position above a horizontal surface on which said lower ends of said legs rest;

e. an upper, circular, horizontal plate that has upper and lower surfaces, a plurality of circumferentially spaced transverse bores that have said upper portions of said stud bolts extending upwardly therethrough, a circular protuberance that depends from said lower surface of said upper plate to mate with said cavity, a circular rib disposed inwardly from the peripheral edge of said protuberance and depending therefrom to divide said cavity into a centered confined space and a ring shaped confined space, a second tubular boss that extends upwardly from said upper plate and that is in communication with a second transverse bore in said upper plate and protuberance that extends to said centered confined space, said ring shaped confined space of slightly greater width than said resilient sealing ring, said rib of a lesser depth than that of said resilient sealing ring, and said upper horizontal plate having a third bore therein adjacent said second bore, said third bore having threads therein, and said second tubular boss having external threads thereon;

f. a plurality of hand tightenable quick release nuts that engage said upper portions of said stud bolts above said upper horizontal plate, said quick release nuts when tightened forcing said upper plate towards said lower plate to compress said sealing ring into pressure sealing engagement with said membrane, said rib, and the portion of said upper plate that defines said ring shaped confined space;

g. hand operable valve means for permitting the discharge of air from said centered confined space at the initiation of the filtering operation, said valve means including:

1. an elongate valve body that has upper and lower ends between which a longitudinal bore extends, a transverse bore in said valve body upwardly disposed from said lower end, a circumferential groove in said valve body upwardly from said transverse bore, external threads on said valve body upwardly from said groove, said external threads on said valve body engaging said threads in said upper portion of said third bore, and hose engageable portion of said valve body adjacent said upper end;
2. a resilient cap on said lower end of said valve body; and
3. a resilient ring in said groove that sealingly engages said recess below said threads therein, said third bore and longitudinal bore being out of communication when said resilient cap is in sealing contact with said valve seat, but said third bore being in communication with said longitudinal bore through said transverse bore when said valve body is rotated to a position where said resilient cap is separated from said valve seat;

h. hand securable, angularly adjustable fitment means that removably and sealingly connect the free end of said pliable tube to said second tubular boss for said pressurized fluid to flow to said centered confined space, with said first particulates remaining on said first membrane, and filtrate from said fluid flowing through said membrane and screen to said centered confined space and thereafter through said grooves, first transverse bore and said first boss, with said fitment means including:

1. an elongate rigid body that has upper and lower ends, a longitudinal bore that extends between said upper and lower ends, a circumferential groove in said body upwardly from said lower end, a collar that extends outwardly from said body and is upwardly disposed relative to said groove, and hose engageable means on said body adjacent said upper end;
2. a resilient ring disposed in said groove, said resilient ring sealingly engaging the interior surface of said second boss when the portion of said body below said collar is disposed within said second boss; and
3. a nut that encircles said body and is in engagement with said threads on said second boss, said nut when tightened forcing said collar into frictional engagement with the upper extremity of said second boss whereby said body cannot rotate relative to said second boss, but said nut when loosened on said threads on said tubular boss permitting said body to be rotated without said resilient ring in said groove on said body coming out of sealing engagement with said interior surface of said second boss.

4,225,441

FILTER ELEMENT

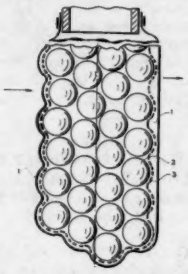
Hans Müller, Erlenbach, Switzerland, assignor to Chemap AG, Männedorf, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,434

Claims priority, application Switzerland, Dec. 22, 1977, 15864/77; Dec. 23, 1977, 15939/77

Int. Cl.³ B01D *29/14*

U.S. Cl. 210—356 **9 Claims**



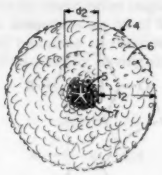
2. A filter element, particularly for a pressure filter, comprising a filter material having an outer surface for accumulating a filter cake thereon, and an inner surface; and a plurality of loose ball-shaped bodies of expanded clay covered with synthetic plastic material, said bodies being operative for supporting said filter material at said inner surface thereof and defining spaces between adjacent ones of said bodies, at least some portions of said filter material bending inwardly into said spaces between said adjacent bodies under the pressure of a medium to be filtered which is supplied onto said outer surface of said filter material, so that the latter assumes irregular wave-like configuration defined by said some portions bent inwardly into said spaced and relative to the remaining parts of said filter material supported by said ball-shaped bodies, said some portions bending outwardly of said spaced during backflushing of the filter element so as to dislodge the filter cake from said outer surface.

4,225,442

CORE SPUN FILTRATION ROVING

Maurice H. Tremblay; Robert E. Manning; Gerard Lanoue, and Frank Gaiteri, Jr., all of Cockeysville, Md., assignors to Brunswick Corporation, Skokie, Ill.

Filed Aug. 22, 1978, Ser. No. 935,752
Int. Cl.[2] B01D *27/02, 29/08;* D02G *3/36, 3/38*
U.S. Cl. 210—497.1 12 Claims



1. In a filter cartridge comprising a rigid hollow center member pervious to the flow of fluid therethrough and a plurality of layers of roving arranged in a helical pattern over the member forming diamond-shaped openings for entrapment of fine particulates from the fluid, the improved roving comprising:

(1) at least one central continuous filamentous core, and

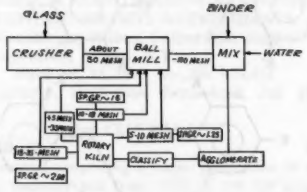
(2) a mass of short staple fibers loosely twisted surrounding and covering the filamentous core, at least some of the fibers having a length of about one-quarter inch, and the core comprising 0.5 percent to 40 percent of the weight of the roving.

4,225,443

SINTERED-GLASS-GRANULE FILTER MEDIUM

Robert H. Harris, Norcross, and John S. Lamica, Chamblee, both of Ga., assignors to The Taulman Company, Atlanta, Ga.

Filed Mar. 22, 1978, Ser. No. 888,918
Int. Cl.[2] B01D *23/10, 15/00, 15/02*
U.S. Cl. 210—510 19 Claims



1. A filter bed having an inlet end and an outlet end and consisting essentially of particles which vary in size and in specific gravity from coarse particles of relatively low specific gravity at the inlet end to finer particles of higher specific gravity at the outlet end,

each particle being a glass pellet of from about 5 to about 35 mesh (U.S. Sieve Size), having a specific gravity of from about 1.00 to about 2.60 and consisting essentially of a sintered granule of glass particles, at least 95 percent of which were finer than 100 mesh prior to sintering,

each granule being a non-compacted loosely-formed agglomerate of a (solid particles)/binder admixture, the solid particles of which consist essentially of glass particles.

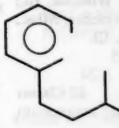
4,225,444

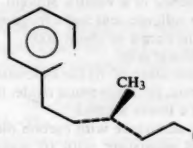
FRAGRANCE COMPOSITIONS CONTAINING 3-METHYL-1-PHENYL-PENTANOL-5 OR SPECIFIC OPTICAL ISOMERS THEREOF AND ONE OR MORE BUTANOYL CYCLOHEXANE DERIVATIVES

Frederick L. Schmitt, Holmdel, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

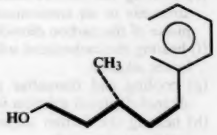
Division of Ser. No. 949,140, Oct. 6, 1978. This application Jul. 13, 1979, Ser. No. 57,415
Int. Cl.[3] D06M *13/16;* C11B *9/00*
U.S. Cl. 252—8.6 3 Claims

1. A fabric softening article of manufacture comprising a non-woven cloth substrate and coated thereon a substrate coating and coated on the substrate coating an outer coating, said outer coating comprising a perfume composition, said perfume composition comprising a mixture consisting essentially of 3-methyl-1-phenylpentanol-5 or stereoisomer thereof having a structure selected from the group consisting of:

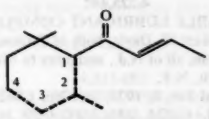




and;



and intimately admixed therewith a cyclohexylbutenone derivative having the structure:



wherein one or two of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond with the proviso that when two of the dashed lines are carbon-carbon double bonds said carbon-carbon double bonds are conjugated.

4,225,445

POLYMERS FOR ACID THICKENING

Kenneth W. Dixon, Sewickley, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Nov. 15, 1978, Ser. No. 960,809
Int. Cl.[2] E21B *43/27*
U.S. Cl. 252—8.55 C 3 Claims

1. A method of fracturing a subterranean formation comprising:

(a) contacting said formation with an aqueous acid-containing fracturing fluid, said acid being capable of reacting with subterranean carbonate formations, which contains as a thickening agent therefor a branched emulsion poly-

mer of diallyldimethylammonium chloride having a molecular weight of at least 5000 and wherein a member selected from the group consisting of triallylmethylammonium chloride, tetraallylammonium chloride, tetraallylpiperazinium chloride and N,N,N',N'-tetraallyl-N,N'-dimethyl hexamethylenediammonium chloride is utilized as the branching agent in the polymerization of the diallyldimethylammonium chloride said polymer containing from about 95 to 99.99 mole percent of diallyl dimethyl ammonium chloride and from about 0.01 to about 5 mole percent of said branching agent;

(b) applying sufficient pressure to the said fracturing fluid to fracture said formation; and

(c) maintaining said pressure while forcing said fracturing fluid into said fracture.

4,225,446

PROCESS FOR PREPARING HIGHLY BASIC MAGNESIUM SULFONATES

Jerry D. Arnold, Vidalia, La.; Harry J. Fair, Winetka, Ill.; Laura V. Fair, and Johnny D. Berry, both of Natchez, Miss., assignors to Calumet Industries, Inc., Chicago, Ill.

Filed Apr. 3, 1978, Ser. No. 892,495

Int. Cl.[2] C10L *1/24, 1/18;* **C10M** *1/38, 1/24*

U.S. Cl. 252—33.2 **43 Claims**

1. A process for preparing a fluid, highly basic magnesium sulfonate comprising:

(a) forming, in the presence of a volatile solvent, an admixture of an oil-soluble sulfonic acid and a magnesium sulfonate having a TBN in excess of about 200;

(b) neutralizing the sulfonic acid;

(c) forming a second admixture of: (i) the sulfonate prepared from the first admixture, (ii) magnesium oxide, (iii) a naphthenic acid, and (iv) a lower alkanol;

(d) treating the second admixture with carbon dioxide;

(e) treating the second admixture with (i) water and (ii) ammonia or an ammonium compound during the initial phase of the carbon dioxide treatment;

(f) heating the carbonated solution to remove water and the lower alkanol;

(g) cooling and thereafter treating the water and lower alkanol depleted solution with additional carbon dioxide;

(h) heating the further carbon dioxide treated solution to remove water; and

(i) thereafter clarifying the solution.

4,225,447

EMULSIFIABLE LUBRICANT COMPOSITIONS

Derek A. Law; Robert H. Davis, both of Pitman, and Harry J. Andress, Wenonah, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,553

Int. Cl.[2] C10M *1/36, 1/24, 3/30, 3/18*

U.S. Cl. 252—34.7 **9 Claims**

1. An emulsifiable lubricant composition consisting essentially of a lubricating oil and a member selected from the group consisting of (1) an alkenylsuccinic anhydride, wherein said alkenylsuccinic anhydride has a number average molecular weight of from about 300 to about 3000, (2) the alkenylsuccinic anhydride of (1) in combination with a rosin salt and (3) the alkenylsuccinic anhydride of (1) in combination with an amine and a rosin soap.

4,225,448

COPPER THIOBIS(ALKYLPHENOLS) AND ANTIOXIDANT COMPOSITIONS THEREOF

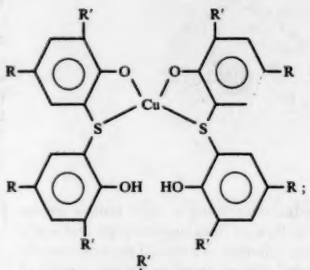
Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

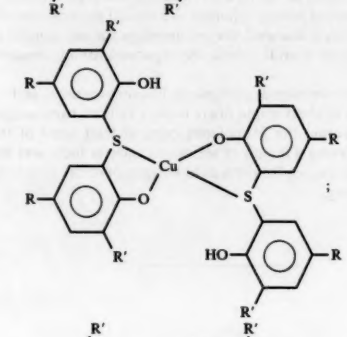
Filed Aug. 7, 1978, Ser. No. 931,572

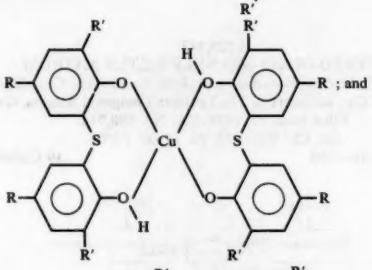
Int. Cl.[3] C10M *1/54*

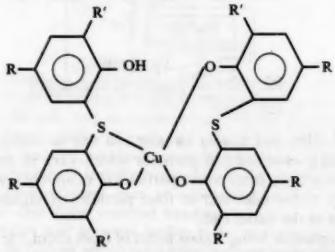
U.S. Cl. 252—42.7 **7 Claims**

1. A composition comprising a major proportion of an organic medium normally susceptible to oxidative degradation and a minor amount sufficient to impart antioxidant properties thereto of a copper organo-sulfur-containing complex wherein said copper organo-sulfur-containing complex has the following general structures:









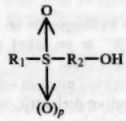
or mixtures thereof in which R is 1,1,3,3-tetramethylbutyl or a 4-t-octyl group and R' is either hydrogen or an alkyl group having from 1–8 carbon atoms in any isomeric arrangement except that the carbon atom bonded (or attached) to the ring carbon atom is attached to no more than two other carbon atoms.

4,225,449
LUBRICATING OIL AND FUEL COMPOSITIONS

Andrew G. Papay, Manchester, and Joseph P. O'Brien, Kirkwood, both of Mo., assignors to Edwin Cooper, Inc., St. Louis, Mo.

Filed Apr. 19, 1979, Ser. No. 31,620
Int. Cl.³ C10M *1/48*
U.S. Cl. 252—46.6 **22 Claims**

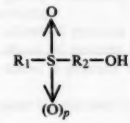
1. In a lubricating oil composition formulated for use in the crankcase of an internal combustion engine, said composition comprising a major amount of an oil of lubricating viscosity, the improvement of including in the composition a friction-reducing amount of an additive having the structure:



wherein R_1 is an aliphatic hydrocarbon group containing about 12–36 carbon atoms, R_2 is a divalent saturated aliphatic hydrocarbon group containing 1 to about 4 carbon atoms and p is 0 or 1, said improvement resulting in increased fuel economy.

8. A lubricating oil composition of claim **1** further characterized by containing a minor amount, sufficient to further reduce friction, of a di-C_{1-4} alkyl C_{12-36} alkylphosphonate.

19. A liquid hydrocarbon fuel suitable for use in internal combustion engines containing a minor friction-reducing amount of an additive selected from the group consisting of fuel-soluble aliphatic hydrocarbylsulfonylalkanols, said additive having the structure:



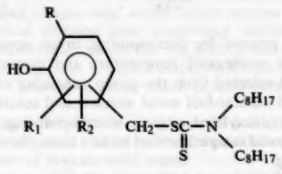
wherein R_1 is an aliphatic hydrocarbon group containing about 12–36 carbon atoms, R_2 is a divalent aliphatic hydrocarbon group containing 1 to about 4 carbon atoms and p is 1.

4,225,450
LUBRICANT COMPOSITIONS CONTAINING DITHIOCARBAMYL ANTIOXIDANTS

Siegfried Rosenberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 13, 1978, Ser. No. 924,416
Claims priority, application Switzerland, Jul. 21, 1977, 9061/77
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—47.5 **8 Claims**

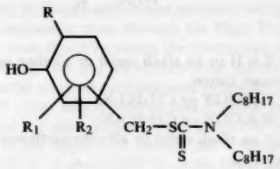
1. A lubricant comprising a major proportion of an oil of lubricating viscosity and from 0.001 to 5% by weight of a stabilizer of the formula I



wherein

R and R_1 is C_1–C_8 alkyl, phenyl or benzyl, R_2 is hydrogen or C_1–C_8 alkyl and the dithiocarbamic group is in the m- or p-position relative to the hydroxyl group of the phenol.

7. A method of stabilizing a lubricant, said lubricant comprising a major proportion of an oil of lubricating viscosity which comprises incorporating into the lubricant from 0.001 to 5% of a compound of the formula



wherein

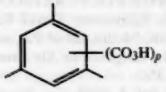
R and R_1 is C_1–C_8 alkyl, phenyl or benzyl, R_2 is hydrogen or C_1–C_8 alkyl and the dithiocarbamic group is in the m- or p-position relative to the hydroxyl group of the phenol.

4,225,451
BLEACHING COMPOSITION

Joseph E. McCrudden, Warrington, and Alan Smith, Tarvin, both of England, assignors to Interox Chemicals Limited, London, England

Continuation of Ser. No. 683,656, May 6, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,602
Claims priority, application United Kingdom, Nov. 18, 1975, 47372/75
Int. Cl.² B05D *7/00*; C11D *3/395*
U.S. Cl. 252—99 **14 Claims**

1. A bleaching agent comprising a compound having the general formula:



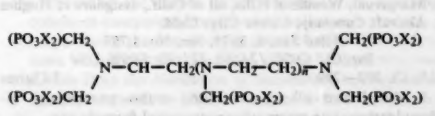
wherein $p \geq 3$, or an anion thereof, the benzene nucleus being optionally substituted by a lower alkyl, chloro or nitro group, said compound being coated with from 3% to 35% by weight of a coating agent.

4,225,452
BLEACHING AND CLEANING COMPOSITION

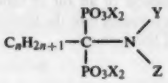
Arthur G. Leigh, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 77,962
Claims priority, application United Kingdom, Sep. 27, 1978, 38347/78
Int. Cl.³ C11D *7/54*
U.S. Cl. 252—102 **5 Claims**

1. A bleaching and cleaning composition comprising a per-compound which liberates active oxygen in solution, an organic activator therefor having at least one RCON< group in the molecule wherein RCO represents a carboxylic acyl radical, at a molar ratio of percompound to activator of from 0.5:1 to about 35:1, and a compound selected from the group of compounds having the general formulae:



wherein n=1–4; and X is H or an alkali metal or alkaline earth metal or ammonium cation;



(II)

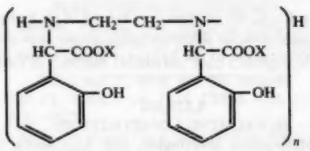
wherein

n=0–2; X is H or an alkali metal or alkaline earth metal or ammonium cation,

Y=H, CH_2COOX or $CH_2PO_3X_2$

Z=H, CH_2COOX or $CH_2PO_3X_2$

(X is H or an alkali metal or alkaline earth metal or ammonium cation)



(III)

wherein n=1–3; and X is H or an alkali metal or alkaline earth metal or ammonium cation, in a proportion of 0.05 to 5.0% by weight and optionally from 0–50% by weight of a surface-active detergent, selected from the group consisting of anionic, nonionic, ampholytic and zwitterionic detergents, and from 0–80% by weight of a detergency builder.

4,225,453

STABILIZATION OF FLAME RETARDANT PREMIX FOR POLYURETHANE

Harry V. DePaul, Eddystone; David C. Fondots, Chalfont; Rocco L. Mascioli, Media, all of Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 3, 1978, Ser. No. 921,422

Int. Cl.[3] **C08G** *18/8;* **B01J** *27/02;* **C08J** *9/02*

U.S. Cl. 252—182 **20 Claims**

1. A premix composition prepared for admixture with an isocyanate to form rigid flame-retardant polyurethane products, said premix composition comprising:

(a) halogenated polyol;

(b) tertiary amine catalyst;

(c) organic blowing agent;

(d) cell stabilizer;

(e) organic sulfur compound selected from the group consisting of thiourea or thiocarbamate compounds; and

(f) at least one unsaturated carbon compound selected from the group consisting of unsaturated hydrocarbons, unsaturated higher fatty acids, and unsaturated higher fatty and polyester alcohols.

4,225,454

ORTHO-CYANOPHENYL BIPHENYLCARBOXYLATE LIQUID CRYSTAL ESTERS AND MIXTURES THEREOF

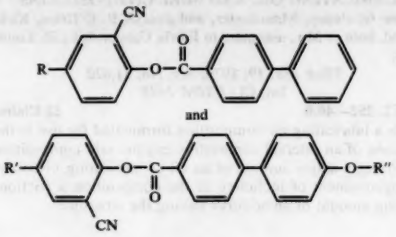
Frederick G. Yamagishi, Newbury Park; Leroy J. Miller, Canoga Park; John E. Jensen, El Segundo, and J. David Margerum, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 8, 1979, Ser. No. 1,795

Int. Cl.[3] **C07C** *121/60, 121/75;* **C09K** *3/34*

U.S. Cl. 252—299 **7 Claims**

1. Alkyl and alkoxy-substituted ortho-cyanophenyl biphenylcarboxylate esters whose structural formula are:



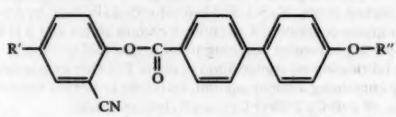
(I)

and

(II)

wherein R and R′ are hydrogen or an alkyl group of the formula C_nH_{2n+1} and R″ is an alkyl group of the formula C_nH_{2n+1} where n ranges from 1 to 8.

6. A nematic liquid crystal mixture exhibiting a high birefringence and a large negative dielectric anisotropy comprising a compound whose formula is



(II)

wherein R′ and R″ are alkyl groups whose formula are C_nH_{2n+1} where n ranges from 1 to 8, which possess a large negative dielectric anisotropy, and a nematic liquid crystal mixture that possesses a positive dielectric anisotropy.

4,225,455

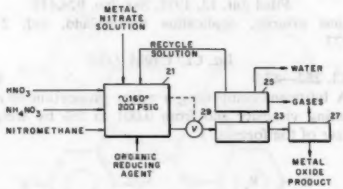
PROCESS FOR DECOMPOSING NITRATES IN AQUEOUS SOLUTION

Paul A. Haas, Knoxville, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 20, 1979, Ser. No. 50,380

Int. Cl.[2] **C01G** *56/00;* **C01B** *21/22*

U.S. Cl. 252—301.1 R **10 Claims**



1. In a process for decomposing, in an aqueous solution maintained at elevated temperature and pressure, a nitrate compound selected from the group consisting of ammonium nitrate and nuclear-fuel metal nitrates, said solution also containing a hydroxylated, organic, nitrate-reducing agent where said compound is a nuclear-fuel metal nitrate, the improvement comprising:

incorporating in said solution an effective proportion of both nitromethane and nitric acid to accelerate decomposition of said compound.

4,225,456

WATER-IN-OIL EMULSION DEFOAMER COMPOSITIONS, THEIR PREPARATION AND USE

William T. Schmidt, Boonton, and Charles T. Gammon, Sparta, both of N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 6, 1978, Ser. No. 957,695
Int. Cl.[2] B01D *19/04*
U.S. Cl. 252—321 15 Claims

1. A water in oil emulsion defoamer composition comprising:

(a) from about 0.5 to about 10 percent by weight of quick-chilled amide, which is a reaction product of a polyamide having at least one alkylene group of 2 to 10 carbon atoms and a fatty acid of from 6 to 18 carbon atoms,

(b) from about 0.3 to about 10 percent by weight of hydrophobic silica

(c) from about 0.5 to about 5 percent by weight of polymer selected from the group consisting of copolymer of vinyl acetate and fumaric acid esterified with tallow alcohol, copolymer of vinyl acetate with maleic acid esters, copolymer of vinyl acetate with ethylene, copolymer of vinyl acetate with propylene, copolymer of vinyl acetate with butylene, methyl glucoside alkoxylated with four moles of propylene oxide, glycerine alkoxylated with fifteen moles of ethylene oxide and forty-five moles of propylene oxide, butanol alkoxylated with thirty moles of propylene oxide, copolymer of lauryl methacrylate and vinyl pyrrolidone, methacrylate copolymer dissolved in refined oil, blown hydrogenated soya oil, blown vegetable oil, blown castor oil, soya alkyd, phenol modified coumarone indene resin, glycerol ester of gum rosin, glycerine ester of polyvinyl-pyrrolidone, lauric acid, palmitic acid, stearic acid, linseed oil, castor oil, lard and tallow,

(d) from about 0.5 to about 5 percent by weight of emulsifier selected from the group consisting of nonionic, anionic acid cationic surfactants,

(e) from about 15 to about 65 percent by weight of oil,

(f) from about 20 to about 60 percent by weight of water,

(g) from about 0 to about 3 percent by weight of silicone surfactant,

(h) from about 0 to about 0.5 percent by weight of formaldehyde solution and

(i) from about 0 to about 0.5 percent by weight of silicone oil.

13. The process of defoaming an aqueous system comprising adding a foam controlling amount of the defoamer composition of claim 1 to the aqueous system.

4,225,457

BRIQUETTE COMPRISING CAKING COAL AND MUNICIPAL SOLID WASTE

Helmut W. Schulz, Harrison, N.Y., assignor to Dynecology Incorporated, Harrison, N.Y.

Division of Ser. No. 820,432, Aug. 1, 1977, Pat. No. 4,152,119.
This application Feb. 26, 1979, Ser. No. 15,083
The portion of this patent subsequent to Oct. 4, 1994, has been disclaimed.
Int. Cl.[2] C07C *2/02*
U.S. Cl. 252—373 8 Claims

1. A process for the production of gaseous effluent rich in hydrogen and carbon monoxide from a feed mixture of coal-like material and organic solid waste, which process is carried out in a vertical reaction zone comprising, successively, a Preheating and Drying zone in the top portion thereof, a Pyrolysis and Coking zone, a High Temperature Reaction zone, and a Partial Combustion zone, which process comprises the steps of:

(a) providing a briquette of a caking coal and said organic solid waste in a ratio of 0.5 to about 3 parts of caking coal to one part of organic solid waste;

(b) introducing said briquette to the top section of said vertical reaction zone and allowing said mixture to flow downwardly through said Preheating and Drying zone while maintaining said Preheating and Drying zone at a temperature of from about 200° F. to about 500° F. at the upper end thereof and a temperature of from about 600° F. to about 900° F. at the lower end thereof;

(c) allowing the preheated and dried briquette to flow downwardly into said Pyrolysis and Coking zone wherein said mixture is directly contacted with hot gaseous products comprising hydrogen and carbon monixide rising from the Partial Combustion zone through the High Temperature Reaction zone thereby causing the destructive distillation of said caking coal and the simultaneous pyrolysis of said organic solid waste to carbonaceous products comprising coke and char, said Pyrolysis and Coking zone being maintained at a temperature of from about 600° F. to about 900° F. at the upper end thereof and a temperature of about 1600° F. to about 2000° F. at the lower end thereof;

(d) allowing said carbonaceous products from said Pyrolysis and Coking zone to flow successively downward through said High Temperature Reaction zone and said Partial Combustion zone;

(e) maintaining said high temperature reaction zone at a temperature of from about 2000° F. to about 2800° F.;

(f) introducing into said Partial Combustion zone an oxidant gas containing at least about 75 percent by volume of oxygen to effect the partial combustion of a portion of said carbonaceous products thereby producing carbon monoxide and minimum amounts of carbon dioxide, the total quantity of said oxidant gas utilized in said vertical reaction zone being introduced into said Partial Combustion zone;

(g) introducing stream of said Partial Combustion zone to react with a remaining portion of said carbonaceous products thereby producing hydrogen and carbon monoxide;

(h) controlling the amounts of steam and oxidant gas introduced into said Partial Combustion zone to balance the exothermic heat of reaction of said oxygen and said carbonaceous products with the endothermic heat of reaction of said steam and said carbonaceous products while maintaining said Partial Combustion zone at a temperature of about 2800° F. to about 3200° F.;

(i) removing from the upper portion of the vertical reaction zone gaseous effluent containing hydrogen and carbon monoxide in a ratio no greater than about one; and,

(j) withdrawing fused slag from the lower portion of the vertical reaction zone.

4,225,458

PROCESS FOR THE CONTINUOUS MANUFACTURE AND SEPARATION OF OXO CATALYSTS

I-Der Huang, West Paterson, and Catherine McCooey, North Brunswick, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 30, 1979, Ser. No. 7,681
Int. Cl.[3] B01J *31/40, 31/04;* C07C *45/12, 27/22*
U.S. Cl. 252—413 9 Claims

1. A process for the manufacture and separation of oxo cobalt containing catalysts which comprises the steps of:

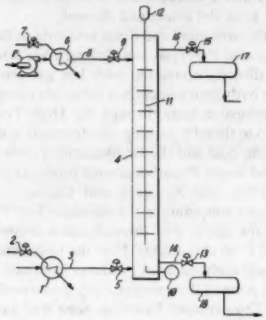
(a) demetalling the crude oxo product by contacting it in the presence of oxygen or air with an excess of an aqueous organic acid to convert cobalt to cobatons compound;

(b) separating the demet water containing the resulting cobaltous compound from the demetalled oxo product;

(c) saponifying the heavy oxygenated fraction (HOF) bottoms which contains alcohols, ethers, acids, esters and acetals from the distillation of demetalled, hydrogenated oxo product with an alkaline material to form a soap; and

(d) contacting the demet water separated in step (b) with

said saponified HOF bottoms obtained in step (c) in a continuous flow extractor to produce a cobalt soap, the



pH of the aqueous effluent from the extractor being in the range of about 8 to about 12.

4,225,459

GLASSES HAVING A LOW NON-LINEAR REFRACTIVE INDEX FOR LASER APPLICATIONS

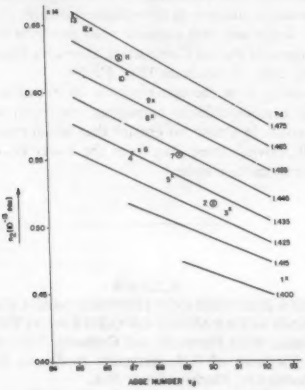
Marga Faulstich, Mainz; Walter Jahn, Ingelheim; Georg Krolla, Mainz, and Norbert Neuroth, Mainz-Mombach, all of Fed. Rep. of Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Apr. 18, 1978, Ser. No. 897,482

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1977, 2717916

Int. Cl.[2] **C03C** *3/12, 3/16;* **C09K** *11/08;* **H01S** *3/17*

U.S. Cl. 252—301.4 P **6 Claims**



1. Glasses suitable for laser applications having a low non-linear refractive index $n_2 < 0.60$ in the optical position range

$nd = 1.40–1.44$

$\nu d = 94–86$

which consist essentially of the following components, expressed as oxides in weight percent:

P_2O_5: 4.5–9.10

As_2O_5: 0–4.5

$P_2O_5 + As_2O_5$: 8.44–9.10

alkali metal oxides: 4.44–10.65

MgO: 3.88–4.23

CaO: 22.13–25.14

MgO + CaO: 26.11–29.02

SrO: 0–11.14

BaO: 0–9.62

SrO + BaO: 5.08–11.14

Al_2O_3: 18.70–20.03

Nd_2O_3: 0–2.58 F_2-O: 27.61–28.90.

3. Glasses suitable for laser applications having a low non-linear refractive index $n_2 = 0.55–0.65$ in the optical position range

$nd = 1.44–1.465$

$\nu d = 90–85$

which consist essentially of the following components, expressed as oxides in weight percent:

P_2O_5: 7.95–11.30

As_2O_5: 0–2.25

$P_2O_5 + As_2O_5$: 9.70–11.30

alkali metal oxides: 1.92–6.38

MgO: 3.82–4.21

CaO: 14.29–19.83

SrO: 9.12–17.90

BaO: 3.16–10.98

Al_2O_3: 15.24–17.07

Nd_2O_3: 1.10–2.35

MgO + CaO: 18.50–23.65

SrO + BaO: 16.08–28.57

F_2-O: 23.54–25.79.

5. Glasses suitable for laser applications having a low non-linear refractive index $n_2 = 0.60–0.70$ in the optical position range

$nd = 1.46–1.475$

$\nu d = 88–83$

which consist essentially of the following components, expressed as oxides in weight percent:

P_2O_5: 6.85–11.40

As_2O_5: 0–4.41

$P_2O_5 + As_2O_5$: 11.09–11.40

alkali metal oxides: 0–1.64

MgO: 3.62–4.27

CaO: 9.53–14.55

SrO: 17.73–21.53

BaO: 10.70–15.90

Al_2O_3: 13.72–15.33

Nd_2O_3: 0–2.18

MgO + CaO: 13.65–18.66

SrO + BaO: 28.71–37.43

F_2-O: 21.25–23.42.

4,225,460

LATENT LEWIS ACID CATALYST SYSTEM AND PROCESS

Richard G. Newell, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 28, 1979, Ser. No. 53,056

Int. Cl.[3] **B01J** *3/02;* **B32B** *5/16;* **C08G** *18/28*

U.S. Cl. 252—429 R **28 Claims**

1. A latent catalyst concentrate which comprises a slurry of

A. rupturable, impermeable microcapsules ranging in size from about 0.1 to 400 microns having

(1) shell walls of a crosslinked interfacial polyurethane-polyether reaction product of an aromatic polyisocyanate having an equivalent weight of up to about 380 and a functionality of from about 2 to 6, glycerol and a cycloaliphatic polyepoxide having an equivalent weight of from about 70 to 220 and a functionality of from about 2 to 3, and

(2) liquid fills comprising a Lewis acid-glycerol complex in

B. a liquid medium selected from aromatic polyisocyanates as defined above and esters of an aromatic carboxylic acid and an alkyl, aralkyl or aryl alcohol, the ester containing up to about 40 carbon atoms.

4,225,461

PROCESS FOR MANUFACTURING A GROUP VIII NOBLE METAL CATALYST OF IMPROVED RESISTANCE TO SULFUR, AND ITS USE FOR HYDROGENATING AROMATIC HYDROCARBONS

Jean Cosyns, Maule, and Marc Gremillon, Paris, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 2, 1979, Ser. No. 211

Claims priority, application France, Jan. 2, 1978, 78 00179

Int. Cl.[2] B01J *27/02*

U.S. Cl. 252—439 **12 Claims**

1. In a process for manufacturing a noble metal catalyst, which comprises the steps of admixing a noble metal from group VIII or a compound of such metal and a halogen with a carrier to form a catalytic composition, and roasting said catalytic composition; the improvement which comprises the further steps of (a) treating the resultant roasted composition with a substantially hydrogen-free inert gas at a temperature of from 100° to 600° C., and then (b) treating the resultant composition from step (a) with a mixture of at least one hydrocarbon and at least one sulfur compound, in a substantially hydrogen-free inert gas environment and at a temperature of from 50° to 400° C.; whereby a catalyst having improved resistance to sulfur is obtained.

4,225,462

CATALYST FOR REDUCING NITROGEN OXIDES AND PROCESS FOR PRODUCING THE SAME

Sumio Umemura; Ryozo Kitoh; Shigeru Itoh; Yasutaka Arima, all of Ube; Kosuke Itoh, Yamaguchi, and Hideaki Fukui, Ube, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Sep. 13, 1978, Ser. No. 941,929

Claims priority, application Japan, Sep. 30, 1977, 52-116689

Int. Cl.[3] B01J *27/02, 8/02, 8/00*

U.S. Cl. 252—440 **14 Claims**

1. A process for producing a catalyst usable for reducing nitrogen oxides with ammonia, said catalyst being water-insoluble and having peaks at 940^{cm-1} and 510^{cm-1} in an infrared absorption spectrum, comprising:

preparing a mixture containing from about 65 to 99% barium sulfate and from about 1 to 35% of water-insoluble vanadium (IV) oxide sulfate which has been prepared by boiling a mixture of a vanadium oxide and concentrated sulfuric acid, said percentages based on the weight of the solids in the mixture;

drying the resultant mixture, and;

calcining the dried mixture at a temperature of from 200° to 450° C. in an oxygen-containing atmosphere.

4,225,463

POROUS CARBON SUPPORT MATERIALS USEFUL IN CHROMATOGRAPHY AND THEIR PREPARATION

Klaus Unger, and Heinz Gotz, both of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,741

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802846

Int. Cl.[2] C01B *31/02, 31/04, 31/08;* B01J *21/18*

U.S. Cl. 252—445 **5 Claims**

1. A process for preparing porous carbon support materials useful in chromatography, which comprises treating activated carbon or coke, having a particle size of about 5 to about 50 μm, a specific surface area of about 10 to about 1,000 m^2/g, and a hardness of at least about 95% attrition resistance, with a solvent or solvents, and then heat treating the activated carbon or coke at a temperature of about 2,400°–3,000° C. under an inert, gas atmosphere; said solvent or solvents affecting the mineral and/or organic impurities in the activated carbon or coke, such that, after said subsequent heat treatment, substantially all of said impurities are removed.

4. A hard, mechanically stable, porous carbon support material useful in chromatography consisting essentially of highly purified activated carbon; highly purified coke, or a mixture thereof, said support material having a carbon content of at least 99%, a specific surface area of about 1 to about 5 m^2/g a particle size of about 5 to about 50 μm and a graphitzed carbon surface.

4,225,464

PROCESS OF PREPARING A POROUS, PURE SILICA

Joseph J. F. Scholten, Sittard, and Lambertus J. M. A. van de Leemput, Echt, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jul. 14, 1978, Ser. No. 924,746

Claims priority, application Netherlands, Jul. 18, 1977, 7707961

Int. Cl.[2] B01J *29/00;* C01B *33/12*

U.S. Cl. 252—458 **9 Claims**

1. Process for preparing a porous, pure silica with a sodium content of at most about 200 ppm, a pore volume of at least about 1.0 cm^3/g and an average particle size of at least about 10 microns, comprising the steps of

(a) admixing to a non-porous silica prepared by the flame hydrolysis of a silica-halogen compound at least about 50% by weight of water per weight of water plus silica,

(b) forming a silica gel from said admixture of non-porous silica and water, and

(c) spray drying said silica gel.

9. The supported chromium-oxide catalyst having as the support a porous, pure silica with a sodium content of at most about 200 ppm and a pore volume of at least about 1.0 cm^3/g prepared by the process comprising the steps of

(a) admixing to a non-porous silica prepared by the flame hydrolysis of a silica-halogen compound at least about 50% by weight of water per weight of water plus silica,

(b) forming a silica gel from said admixture of non-porous silica and water,

(c) spray drying said silica gel to form a catalyst support,

(d) placing a chromium compound on said support, and

(e) heating the supported chromium compound in a non-reducing atmosphere to form a supported chromium compound.

4,225,465

PRODUCTION OF MALEIC ANHYDRIDE FROM FOUR-CARBON HYDROCARBONS USING CATALYSTS PREPARED BY HYDROTHERMAL TECHNIQUES

Noel J. Bremer, Kent, Ohio, assignor to Standard Oil Company (Ohio), Ohio

Continuation-in-part of Ser. No. 801,950, May 31, 1977, Pat. No. 4,172,084. This application May 2, 1978, Ser. No. 902,207

Int. Cl.[2] B01J *27/14*

U.S. Cl. 252—435 **24 Claims**

1. A process for preparing a catalyst comprising the mixed oxides of vanadium and phosphorus, said process comprising the steps of:

(a) forming an aqueous oxide slurry of a vanadium compound containing pentavalent vanadium and a mineral acid-free, inorganic reducing agent capable of reducing said pentavalent vanadium to a valence state below +5, wherein said reducing agent is selected from the group consisting of a finely divided metal or a colloidal metal;

(b) admixing a phosphorus compound containing pentavalent phosphorus with said aqueous slurry of step (a);

(c) heating said aqueous slurry of step (b) at a temperature of at least 120° C. under autogenous pressure so that substantial evaporation of the water in said slurry is prevented;

(d) removing the water from the slurry of step (c) to form a dried catalyst; and

(e) calcining the dried catalyst at a temperature of 250° C. to 600° C. in the presence of an oxygen-containing gas.

4,225,466

CATALYTIC OXIDE COMPOSITION FOR PREPARING METHACRYLIC ACID

Masahiro Wada; Michio Ueshima, both of Nishinomiya; Isao Yanagisawa, Ikeda, and Michikazu Ninomiya, Kobe, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Division of Ser. No. 536,864, Dec. 27, 1974, Pat. No. 4,180,678. This application Mar. 27, 1979, Ser. No. 24,390
Claims priority, application Japan, Dec. 29, 1973, 48-3630; Jan. 19, 1974, 49-8233
Int. Cl.[3] B01J *27/14*
U.S. Cl. 252—435 8 Claims

1. A catalytic oxide composition of the general formula

$$Y_aX_bP_cMo_dV_eO_f$$

wherein Y is at least one metallic element selected from the group consisting of copper, cobalt, zirconium, bismuth, antimony and arsenic, X is at least one alkali metal element selected from the group consisting of sodium, potassium, rubidium and cesium, and a, b, c, d, e and f represent the atomic ratios of the several elements; and when d is 12, a is a positve number up to and including 10, b is a positive number up to and including 10, c is 0.1 to 10, e is 0.1 to 10 and f is a value that is determined by the valances and atomic ratios of the other elements present; and wherein the vanadium component of the catalytic oxide is in the form of a complex prepared by reacting vanadium pentoxide and orthophosphoric acid.

4,225,467

NEUTRON ABSORBING ARTICLE AND METHOD FOR MANUFACTURE OF SUCH ARTICLE

Carl H. McMurtry, Youngstown; Robert G. Naum, Lewiston; Dean P. Owens, and Michael T. Hortman, both of Tonawanda, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,966
Int. Cl.[2] G21C *11/00*
U.S. Cl. 252—478 16 Claims

1. A neutron absorbing article which comprises boron carbide particles in which the boron carbide content is at least 90% by weight and which are substantially all of a size to pass through a No. 20 U.S. Sieve Series screen and a solid, irreversibly cured phenol aldehyde condensation polymer cured to a continuous matrix about the boron carbide particles, with the proportion of boron carbide in the article being such that it contains at least 6% by weight of B^{10} from the boron carbide content thereof.

4,225,468

TEMPERATURE COEFFICIENT OF RESISTANCE MODIFIERS FOR THICK FILM RESISTORS

Paul C. Donohue, and Sanford M. Marcus, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1978, Ser. No. 934,270
Int. Cl.[2] H01B *1/06*
U.S. Cl. 252—509 6 Claims

1. A resistor composition consisting essentially of inorganic powder solids content dispersed in an organic vehicle wherein the solids content consists essentially of

A. 1–20 parts by weight, based on the weight of the solids, of TCR modifier which is substantially nonreactive with and nonreducible by the conductive material selected from the group consisting of TiO, its higher oxidation state precursors Ti_3O_5 and Ti_2O_3; NbO; TaO; C; Si; Ge; SiC; compounds based on Groups IIIA and VA of the periodic chart of the elements; compounds based on Groups IIB and VIA of the periodic chart, rare earth nitrides and Group III B nitrides.

B. 99–80 parts by weight, based on the weight of the solids, of

a. 10–95 parts by weight, based on the weight of (a) plus (b), of conductive material selected from the group consisting of LaB_6, YB_6, rare earth hexaborides, CaB_6, BaB_6 and SrB_6; and

b. 90–5 parts by weight, based on the weight of (a) plus (b), of glass; and wherein the composition is compatible with copper conductors and is fireable in substantially nonoxidizing atmosphere.

4,225,469

METHOD OF MAKING LEAD AND BISMUTH PYROCHLORE COMPOUNDS USING AN ALKALINE MEDIUM AND AT LEAST ONE SOLID REACTANT SOURCE

Harold S. Horowitz, Clark; John M. Longo, New Providence, and Joseph T. Lewandowski, Middlesex, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 856,648, Dec. 2, 1977. This application Nov. 1, 1978, Ser. No. 956,745
Int. Cl.[2] H01B *1/06*
U.S. Cl. 252—518 42 Claims

1. A method of preparing compounds having the formula: ti $A_2[B_{2-x}A_x]O_{7-y}$

wherein A is selected from the group consisting of lead, bismuth and mixtures thereof, wherein B is selected from the group consisting of ruthenium, iridium and mixtures thereof, wherein x is a value such that $0 \leq x \leq 1.0$ and y is a value such that $0 \leq y \leq 1$, comprising:

reacting A cations and B cations from at least one solid cation reactant source in a liquid alkaline medium having a pH of at least about 13.5 in the presence of an oxygen source at a temperature below about 200° C. for a sufficient time for reaction to occur.

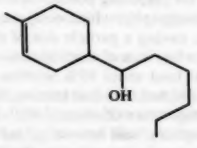
4,225,470

CYCLOHEXANE ALKYL CARBINOL PERFUME COMPOSITIONS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 52,332, Jun. 27, 1979, which is a division of Ser. No. 8,924, Feb. 2, 1979, Pat. No. 4,197,328, which is a continuation-in-part of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Oct. 17, 1979, Ser. No. 85,685
Int. Cl.[3] C11B *9/00*; A61K *7/46*
U.S. Cl. 252—522 R 3 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of intimately admixing with a perfume base an aroma augmenting or enhancing quantity of a compound having the structure:

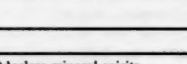


4,225,471
CLEANING COMPOSITION CONTAINING MINERAL SPIRITS ALKANOLAMIDE, AND OLEYL DIMETHYLAMINE OXIDE

Robert T. Claus, and William H. Frisz, both of Cincinnati, Ohio, assignors to Chemed Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 788,927, Apr. 19, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,191
Int. Cl.[2] C11D *1/835, 7/50*
U.S. Cl. 252—547 **3 Claims**

1. Composition of matter consisting essentially of:

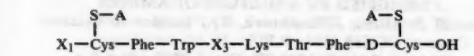
	Wt. %
(1) Odorless mineral spirits	25–98
(2) Primary or secondary alcohol of 11–15 carbon atoms, ethoxylated with 5 average moles of ethylene oxide, and mixtures thereof	1–60
(3) Oil-soluble alkanolamide of the formula  where R_1 = H or methyl; m = 1 or 2; n = 2 − m; $R_2 = C_xH_{2x+1}$ or C_xH_{2x-1}, where x is 10–18	0.5–15
(4) Oleyl dimethylamine oxide	.5–20
(5) Pine oil	0–90

4,225,472
TRUNCATED SOMATOSTATIN ANALOGS

Dimitrios Sarantakis, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,842
Int. Cl.[3] C08L *37/00;* **C07C** *103/52;* **A61K** *37/00*
U.S. Cl. 260—8 **5 Claims**

1. A compound of the formula



in which
X_1 is hydrogen, des-amino- Ala-Gly- or Ala-D-Ala-;
X_3 is D-Trp or 5- or 6- fluoro-D-Trp;
and the A groups are hydrogen or a direct bond between the two sulfur atoms;
or a pharmaceutically acceptable salt thereof.

4,225,473
ALKYD-MONOMER HIGH-SOLIDS COATING PROCESS

Philip Heiberger, Broomall, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 887,797, Mar. 17, 1978, abandoned. This application Jan. 18, 1979, Ser. No. 4,479
Int. Cl.[2] B05D *1/02, 3/02;* **C09D** *3/66*
U.S. Cl. 260—22 CB **4 Claims**

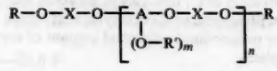
1. A process of applying a coating composition to a substrate by spraying and crosslinking and polymerizing wherein said coating composition comprises
an unsaturated fatty acid alkyd resin,
an alkyl dimethacrylate or trimethacrylate monomer,
a cobalt salt effective as a catalyst for the oxidative crosslinking of the alkyd resin and for initiating vinyl polymerization,
a complexing agent to block the cobalt catalyst, and
a polar solvent;
wherein the coating composition contains by weight, based on the alkyd resin plus the methacrylate monomer, at least about 50% of the alkyd resin, about from 10 to 40% by weight of the methacrylate monomer, and at least about 10% polar solvent; and wherein said process comprises adding a peroxide to the coating composition during spraying of the composition on the substrate to enhance oxidative crosslinking of the alkyd resin and subsequent polymerization of the methacrylate monomer.

4,225,474
ORGANOPHOSPHONATE COESTER STABILIZERS

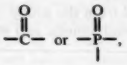
Motonobu Minagawa, Kosigaya; Yutaka Nakahara, Iwatsuki, and Masayuki Takahashi, Tokorozawa, all of Japan, assignors to Argus Chemical Corp., Brooklyn, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,376
Claims priority, application Japan, Feb. 4, 1977, 52/11258
Int. Cl.[2] C07C *69/96;* **C08K** *5/52*
U.S. Cl. 260—23 XA **16 Claims**

1. As a new composition of matter, a coester having a molecular weight below 10,000, of at least one polyhydric phenol having 2 to 3 phenolic hydroxyl groups and 1 to 3 non-condensed benzenoid rings, with carbonic acid and an organophosphonic acid having the formula



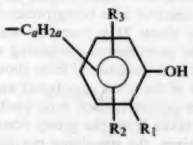
in which
R is an alkyl, cycyloalkyl, aralkyl, aryl, or alkaryl group or the group —A—$(OH)_{m+1}$;
X independently at each occurrance



provided that at least one X is

and at least one X is

A is a residue of a dihydric or trihydric phenol;
R′ is a hydrogen atom or —X—O—R;
R″ is



R_1 is an alkyl group,
R_2 and R_3 are hydrogen or alkyl,
a is an integer from 1 to 8,
m is zero or one, and n is an integer from 1 to 20.

4,225,475
BASIC DYE INK

Constantine G. Carumpalos, Cincinnati, Ohio, assignor to Borden, Inc., Columbus, Ohio

Filed Aug. 24, 1976, Ser. No. 717,165
Int. Cl.[2] C08L *93/04, 25/08*
U.S. Cl. 260—25 **8 Claims**

1. Ink composition for printing on paper toweling products which is resistant to ink transfer and has pH of 8.1 to 8.5 and viscosity of 10 to 30 seconds in #2 Zahn cup consisting essentially of an ink concentrate dispersed in an ink vehicle, the ink concentrate is prepared from components consisting essentially of the following in amounts specified on weight percent basis:

69.20—Organic solvent miscible with water;
8.10—basic dye selected from the group consisting of xanthene dyes, diphenyl dyes, diphenyl methane dyes, triaryl methane dyes and mixtures thereof;
3.25—sodium benzoate;
16.20—acidic laking resin selected from the group consisting of phenolic resins, styrene-acrylic-maleic resins and mistures thereof; and
3.25—nonionic surfactant;

and the ink vehicle is prepared from components consisting essentially of the following in amounts specified on weight percent basis:

14.25—acrylic binder resin selected from the group consisting of polymers of C_1 to C_4 alkyl acrylates and/or methacrylates with acrylic or methacrylic acid where the acid is in a minor proportion to the total amount of acrylates and methacrylates;
7.35—water;
11.60—C_2 to C_{10} alkanol solvent;
0.70—28% ammonium hydroxide;
23.00—divalent or trivalent metal salt of fumaric acid adduct of rosin;
41.00—sulfonated sulfone anionic binder resin;
0.10—silicone defoamer;
2.00—buffer selected from the group consisting of morpholine, C_2 to C_6 alkanol amines, and mixtures thereof.

4,225,476
ADHESIVE BLEND OF WOOD ROSIN AND THERMOPLASTIC GRAFT COPOLYMER

Clarence F. Hammer, Wilmington, Del., and Harold K. Sinclair, Louisville, Ky., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 523,468, Nov. 13, 1974, Pat. No. 3,972,961. This application May 14, 1976, Ser. No. 686,489
Int. Cl.[2] C08L *77/00, 93/04*
U.S. Cl. 260—27 R **1 Claim**

1. A hot melt adhesive blend consisting essentially of (a) a thermoplastic graft copolymer prepared according to a process which comprises heating for about 15 seconds to 60 minutes, with mixing, (1) a trunk copolymer of at least two monomers, at least one of said monomers providing amine-reactive sites taken from the group consisting of an anhydride group, a vicinal pair of carboxylic groups and a carboxylic group adjacent to an alkoxycarbonyl group, wherein the alkoxy group contains up to 20 carbon atoms, and at least one of said monomers containing no amine-reactive sites, the monomer(s) providing the amine-reactive sites being present in the amount of from about 1.4 to about 21 percent by weight of the trunk copolymer and the monomer(s) containing no amine-reactive sites being present in the amount of from about 79 to about 98.6 percent by weight of the trunk copolymer and (2) one or more type of side chain polymer, each type having per chain one active amine site taken from the group consisting of primary and secondary amines, the remaining portion of each type of said side chain polymer being substantially unreactive with the reactive sites of the trunk copolymer, said thermoplastic graft copolymer having a trunk copolymer content of from about 25 to 95 percent by weight and a side chain polymer content of from about 5 to 75 percent by weight, said trunk copolymers containing, on a number average, from about 300 to about 50,000 chain atoms, and said side chain polymers containing, on a number average, from about 25 to about 1,000 chain atoms, and (b) at least one wood rosin selected from the group consisting of wood rosin, hydrogenated wood rosin, polymerized wood rosin, polymerized hydrogenated wood rosin and esters of said rosins.

4,225,477
CONTROL OF RECOATING TIME FOR WATER DILUTABLE ALKYD SURFACE COATING COMPOSITIONS

Ramesh C. Vasishth, Danville, and Robert S. Wang, Concord, both of Calif., assignors to Envirosol Systems International, Ltd., Orinda, Calif.

Filed Oct. 30, 1978, Ser. No. 956,126
Int. Cl.[2] C08J *3/00*
U.S. Cl. 260—29.2 TN **9 Claims**

1. A protective coating composition having a convenient recoating time comprising: a water dilutable alkyd resin; drier for said resin; at least one organic polar solvent for said resin; and water; the weight ratio of water to organic solvent being sufficiently high to increase the duration of the initial interval when recoating without wrinkling of the coating may be executed, but insufficiently high to cause resin precipitation out of solution or discontinuities in the coating, the weight ratio of water to organic solvent being at least about 5.0 to 1.0.

4,225,478
CATIONIC POLYEPOXIDE RESINOUS COMPOSITION MODIFIED BY A MIXTURE OF AMINES

Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 947,375, Oct. 2, 1978, which is a continuation-in-part of Ser. No. 858,135, Dec. 7, 1977, abandoned. This application Jul. 30, 1979, Ser. No. 61,968
Int. Cl.[2] C08L *63/00, 63/02;* **C09D** *3/56, 3/58*
U.S. Cl. 260—29.2 TN **4 Claims**

1. An aqueous composition comprising a resinous composition salted with an acid and dissolved or dispersed in water wherein the resinous composition is the reaction product of

(A) a polyepoxide resin derived from a dihydric phenol or a dihydric alcohol and an epihalohydrin, said polyepoxide resin having a 1,2-epoxide equivalent weight of about 180 to about 650;
(B) an amine mixture of
(1) an aliphatic monoamine containing about 8 to about 18 carbon atoms, one primary amine group and no other groups reactive with epoxy groups, and
(2) an aliphatic diamine containing one primary amine group and one tertiary amine group and no other groups reactive with epoxide groups
wherein the molar ratio of (1) and (2) in the mixture varies from about 2:1 to about 1:3, and
(C) a monoepoxide which contains one 1,2-epoxide group and no other groups reactive with amine groups, said monoepoxide having about 8 to 24 carbon atoms

wherein A, B and C are reacted in the mol ratio of 5:6:2 to 2:3:2, and wherein A and C are added to B at a reaction temperature of about 50° C. to about 150° C. at an addition rate which does not substantially exceed the epoxy-amine reaction rate.

4,225,479

CATIONIC EPOXIDE-AMINE REACTION PRODUCTS

Darrell D. Hicks, Jeffersontown, Ky., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 947,376, Oct. 2, 1978, which is a continuation-in-part of Ser. No. 858,134, Dec. 7, 1977, abandoned. This application Jul. 30, 1979, Ser. No. 62,439

Int. Cl.[2] C08L *63/00, 63/02;* C09D *3/56, 3/58*

U.S. Cl. 260—29.2 TN 4 Claims

1. An aqueous composition comprising a resinous composition salted with an acid and dissolved or dispersed in water, wherein the resinous composition is the reaction product of

(A) polyepoxide resin derived from a dihydric phenol or a dihydric alcohol and an epihalohydrin, said polyepoxide resin having a 1,2-epoxide equivalent weight of about 150 to about 300; and

(B) an amine mixture of

(1) an aliphatic monoamine containing about 8 to about 18 carbon atoms, one primary amine group and no other groups reactive with epoxy groups, and

(2) an aliphatic diamine containing one primary amine group and one tertiary amine group and no other groups reactive with epoxide groups wherein the molar ratio of (1) and (2) in the mixture varies from about 2:1 to about 1:3,

wherein A and B are reacted in the mol ratio of 10:9 to 9:10 and wherein A is added to B at a reaction temperature of about 50° C. to about 150° C. at an addition rate which does not substantially exceed the epoxy-amine reaction rate.

4,225,480

ADDITION INTERPOLYMERS HAVING IMPROVED STABILITY AND TWO-PACKAGE COMPOSITIONS COMPRISING SUCH INTERPOLYMERS AND POLYEPOXIDES

Karl F. Schimmel, Verona; Roger M. Christenson, Gibsonia; Jerome A. Seiner, Pittsburgh, and James A. Claar, Export, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 771,134, Feb. 23, 1977, abandoned. This application Jul. 31, 1978, Ser. No. 929,882

Int. Cl.[2] C08F *8/30, 8/32, 8/44;* C08L *31/02*

U.S. Cl. 260—29.6 NR 22 Claims

1. A two-package polymeric composition comprising cocurable resinous components consisting essentially of:

(a) a polyepoxide having a 1,2-epoxy equivalence greater than 1.0; and

(b) at addition interpolymer, containing pendent anionic salt groups, pendent carboxyl groups, pendent amine groups and pendent aminolysis-resistant organic groups, wherein said interpolymer is prepared by interpolymerizing from about 5 percent to about 60 percent by weight of at least one ethylenically unsaturated carboxylic acid monomer and from about 40 percent to about 95 percent by weight of at least one aminolysis resistant organic monomer selected from the group consisting of monoolefinic and diolefinic hydrocarbons, unsaturated carboxylic acid amides, unsaturated organonitriles, non-methyl esters of alpha, alkyl-substituted carboxylic acids, and mixtuures thereof so as to form an interpolymer having pendent carboxyl groups and pendent aminolysis-resistant organic groups and wherein said interpolymer is further reacted with sufficient alkylenimine to iminate from about 5 mole percent to about 95 mole percent of the carboxyl groups to form the pendent amine groups and sufficient base to form the pendent anionic salt groups and to result in a level of neutralization sufficient to give the interpolymer a pH of greater than about 6 in water,

said components (a) and (b) being interreactive to form a hard, solvent-resistant crosslinked polymer.

4,225,481

AMINOPLAST DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

Kuno Wagner, Leverkusen-Steinbuechel, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 25, 1974, Ser. No. 464,099

Claims priority, application Fed. Rep. of Germany, May 12, 1973, 2324134

Int. Cl.[3] C08L *61/20*

U.S. Cl. 260—33.2 R 14 Claims

1. In a process which comprises preparing aminoplast condensates by the oligocondensation or polycondensation of substances which are capable of aminoplast formation, the improvement wherein said oligocondensation or said polycondensation is conducted in an organic polyhydroxyl compound having a molecular weight of from about 250 to about 14,000, whereby a storage stable aminoplast dispersion having a solids content of from about 5 to about 45% by weight is produced.

4,225,482

CONCENTRATED AQUEOUS LATEX OF ETHYLENE/C_2-C_3-PERFLUOROCARBON COPOLYMER OR TERPOLYMER

Richard A. Ferren, Ambler; Daniel A. Dimmig, King of Prussia, and John C. Grigger, Oreland, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 12, 1978, Ser. No. 968,831

Int. Cl.[2] C08L *27/18*

U.S. Cl. 260—29.6 F 4 Claims

1. A process for preparing a water-based concentrated latex of a copolymer or terpolymer containing approximately equimolar amounts of ethylene and tetrafluoroethylene and 0–10 mole % hexafluoropropylene which comprises mixing at about 30°–80° C. an aqueous latex containing about 25–30% solids of said copolymer or terpolymer and 6–20% by weight of the latex solids of a surfactant, allowing the mixture to stand quiescent until two layers form, separating off the upper layer and recovering the lower layer as a concentrated latex containing 1.5 to 2.5 times the percent solids content of the starting latex.

4,225,483

BORIC ACID ESTERS AND OXETANES FOR STABILIZING PHOSPHITE-FREE POLYCARBONATES

Erich Eimers; Rolf Dhein, both of Krefeld, and Wolfgang Cohnen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 20, 1978, Ser. No. 953,131

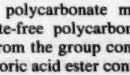
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750043

Int. Cl.[2] C08K *5/04, 5/15*

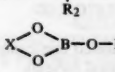
U.S. Cl. 260—45.8 A 10 Claims

1. A polycarbonate molding composition comprising a phosphite-free polycarbonate and a stabilizing additive selected from the group consisting of

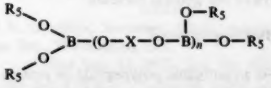
(i) a boric acid ester containing at least one oxetane group of the structural formulae I, IIIa, or IIIb



(I)



(IIIa)



(IIIb)

wherein at least one of the radicals R_1, R_2 and R_3 is the radical

of a monoalcohol containing at least one oxetane group, while at most 2 of the radicals R_1, R_2 and R_3 are radicals of primary, secondary or tertiary aliphatic or cycloaliphatic monoalcohols which are free from oxetane groups or monohydroxyaryl compounds which are free from oxetane groups,

X is the radical of a dialcohol HO-X-OH containing at least one oxetane group, in which X is an organic radical, containing at least one oxetane group, with between about 5 and 20 C atoms,

R_5 is the radical of a monoalcohol which is free from oxetane groups or of a monohydroxyaryl compound which is free from oxetane groups and

n is an integer from about 1 to 10,

(ii) a mixture of a boric acid ester containing at least one oxetane group of the formulae I, IIIa or IIIb and a boron-free oxetane compound wherein the ratio of boron atoms to oxetane groups is between about 1:2 and 1:10 and

(iii) a mixture of a boric acid ester which is free from oxetane groups and a boron-free oxetane compound wherein the ratio of boron atoms to oxetane groups is between about 1:2 and 1:10,

characterized in that the stabilizing additive is present in amounts between about 0.01 and 1% by weight, relative to the weight of pure polycarbonate resin.

4,225,484

TRIPENTYLAMMONIUM DECAMOLYBDATE AND COMPOSITION CONTAINING SAME

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1979, Ser. No. 49,253

Int. Cl.³ C07F 11/00

U.S. Cl. 260—45.75 R **4 Claims**

1. Tripentylammonium decamolybdate having the empirical formula $[H.(C_5H_{11})_3N]_4Mo_{10}O_{32}$ n(H_2O) where "n" is an integer of from 0 to 4, characterized by major x-ray diffraction peaks at "d" spacings of 12.1Å, 11.6Å, 8.62A and 8.34Å.

2. A smoke retarded composition comprising a vinyl chloride or vinylidene chloride polymer together with a smoke retardant amount of tripentylammonium decamolybdate having the empirical formula

$$[H.(C_5H_{11})_3N]_4Mo_{10}O_{32}.nH_2O$$

where "n" is an integer of from 0 to 4, characterized by major x-ray diffraction peaks at "d" spacings of 12.1Å, 11.6Å, 8.62Å, and 8.34Å.

4,225,485

CHEMILUMINESCENT NAPHTHALENE-1,2-DICARBOXYLIC ACID HYDRAZIDE-LABELED POLYPEPTIDES AND PROTEINS

Robert T. Buckler, Edwardsburg, Mich., and Hartmut R. Schroeder, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 24, 1978, Ser. No. 927,286

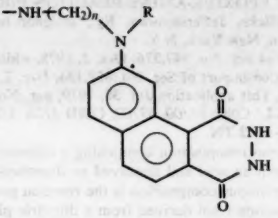
Int. Cl.² C07G 7/00

U.S. Cl. 260—112 B **11 Claims**

1. In a chemiluminescent-labeled conjugate for use in specific binding assays of the general formula:

L(CO)—(NH)labeling substance

wherein L(CO)—is an antigenic polypeptide or protein bound to said labeling substance through an amide bond, characterized in that said —(NH)labeling substance has the formula



wherein R is hydrogen or straight chain alkyl containing 1–4 carbon atoms and n=2–6.

4,225,486

ALOCTIN A

Ikuo Suzuki, Owariasahi, Japan, assignor to Aloace Company Limited, Aichi, Japan

Filed Nov. 20, 1978, Ser. No. 961,864

Claims priority, application Japan, Nov. 21, 1977, 52-138907; Feb. 25, 1978, 53-20402

Int. Cl.² C07G 7/00; A61K 37/00

U.S. Cl. 260—112 R **1 Claim**

1. A glycoprotein isolated from Aloe, a plant belonging to Liliaceae,

(1) having a molecular weight of 1.8×10^4 and a ratio of protein to sugar of 8 to 2 by weight;

(2) yielding only a single band upon SDS-polyacrylamide gel electrophoresis without 2-mercaptoethanol treatment and yielding two discrete bands upon SDS-polyacrylamide gel electrophoresis with 2-mercaptoethanol treatment;

(3) having hemagglutinating and cytoagglutinating activity for transformed cells;

(4) having mitogenic activity for lymphocytes, cap forming activity for lymphocytes and cultured transformed cells using fluorescence labeled glycoprotein;

(5) having binding reactivity with some types of serum proteins;

(6) having the capability of activating serum complement components;

(7) having an infrared spectrum whose absorption peaks appear at 1200–1240 cm^{-1}, 1500–1520 cm^{-1}, 1620–1640 cm^{-1} and 3200–3260 cm^{-1}; and

(8) having a nuclear magnetic resonance spectrum whose absorption peaks appear at 15–27 ppm (multiplet), 67–69 ppm (singlet), 71–77 ppm (multiplet), 99–100 ppm (singlet) and 169–180 ppm (multiplet).

4,225,487

AFFINITY CHROMATOGRAPHY OF *VIBRIO CHOLERAE* ENTEROTOXIN-GANGLIOSIDE POLYSACCHARIDE AND THE BIOLOGICAL EFFECTS OF GANGLIOSIDE-CONTAINING SOLUBLE POLYMERS

Pedro Cuatrecasas, 10 Hillside Rd., and Indu Parikh, 4404 Keswick Rd., both of Baltimore, Md. 21210

Division of Ser. No. 713,095, Aug. 10, 1976, Pat. No. 4,125,492, which is a continuation of Ser. No. 475,313, May 31, 1974, abandoned. This application Apr. 13, 1978, Ser. No. 895,961

Int. Cl.² C07G 7/00

U.S. Cl. 260—121 **14 Claims**

1. In a polysaccharide matrix useful as an absorbent for affinity chromatography techniques, the improvement which comprises a ganglioside molecule covalently coupled to the backbone of said polysaccharide matrix, and wherein a spacer moiety is interposed between the polysaccharide matrix and the coupled ganglioside, said spacer moiety comprising a polyfunctional macromolecular spacer coupled to the backbone of

said polysaccharide in multipoint attachment, the said polyfunctional macromolecule being selected from the group consisting of native albumin and denatured albumin, and the said ganglioside being covalently coupled to said polyfunctional macromolecule.

4,225,488

PROCESS FOR MAKING SULFURIZED OLEFINS

Andrew G. Horodysky, Cherry Hill, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 25, 1978, Ser. No. 928,035

Int. Cl.[3] **C07C** *149/10, 149/12;* **C10M** *3/32, 5/22*

U.S. Cl. 260—139 **16 Claims**

1. An organic sulfide produced by an improved process comprising the steps of:

(1) reacting sulfur halide with an olefin, the olefin to sulfur halide molar ratio ranging from about 1:1 to about 1.65:1; and

(2) reacting the product of (1) with an alkali metal sulfide;

(3) the improvement comprising reacting the product of (2) with a separate portion of an aqueous solution comprising alkali metal sulfide such that the alkali metal sulfide is present to the extent of from about 0.2 mole to about 1.2 mole of sulfide per mole of the product of (2).

4,225,489

HETEROCYCLIC AZO DYES AND PIGMENTS CONTAINING 4-QUINAZOLINONE MOIETIES

Meinhard Rolf; Rütger Neeff, and Walter Müller, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

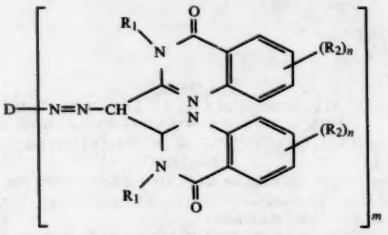
Filed Sep. 28, 1977, Ser. No. 837,404

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 2644265

Int. Cl.[2] **C09B** *29/36, 33/12;* **D06P** *1/52;* **C09D** *11/16*

U.S. Cl. 260—154 **4 Claims**

1. Azo pigment of the formula



wherein

D is the radical of an aromatic or hetero-aromatic amine which is free from sulphonic acid groups;

m is the integer 1 or 2;

n denotes 0, 1, 2, 3 or 4;

R_1 is hydrogen or C_1–C_4 alkyl; and

R_2 is chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, nitro, trifluoromethyl, cyano, carboxamide, C_1–C_4-alkyl-carboxamide, phenylcarboxamide, C_1–C_4 alkylphenylcarboxamide, C_1–C_4-alkoxyphenylcarboxamide, fluoro-, chloro-, bromo-phenylcarboxamide, nitrophenylcarboxamide, benzylcarboxamide, C_1–C_4-alkylbenzylcarboxamide, C_1–C_4-alkoxybenzylcarboxamide, fluoro-, chloro-, bromo-benzylcarboxamide, nitrobenzylcarboxamide, sulphonamide, C_1–C_4-alkylsulphonamide, phenylsulphonamide, C_1–C_4-alkylphenylsulphonamide, C_1–C_4-alkoxyphenylsulphonamide, fluoro-, chloro-, bromo-phenylsulphonamide, nitrophenylsulphonamide, benzylsulphonamide, C_1–C_4- alkylbenzylsulphonamide, C_1–C_4-alkoxybenzylsulphonamide, fluoro-, chloro-, bromo-benzyl sulphonamide, nitrobenzylsulphonamide, C_1–C_4-alkylcarbonylamino, benzoylamino, chlorobenzoylamino, C_1–C_4-alkylbenzoylamino, C_1–C_4-alkoxybenzoylamino, nitrobenzoylamino, phenylamino, C_1–C_4-alkylphenylamino, C_1–C_4-alkoxyphenylamino, fluoro-, chloro-, bromo-phenylamino, or nitrophenylamino.

4,225,490

HETEROCYCLYL-AZO-PHENYL DYES HAVING A CATIONIC GROUP LINKED THROUGH A BRANCHED ALKYLENE CHAIN TO THE NITROGEN ATOM OF THE COUPLING COMPONENT RADICAL

Roland Entschel, Basel, and Beat Henzi, Neu-Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

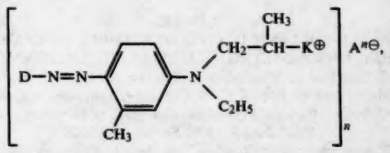
Continuation-in-part of Ser. No. 421,018, Dec. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 262,067, Jun. 12, 1972, abandoned. This application Dec. 12, 1975, Ser. No. 640,215

Claims priority, application Switzerland, Jun. 17, 1971, 8820/77

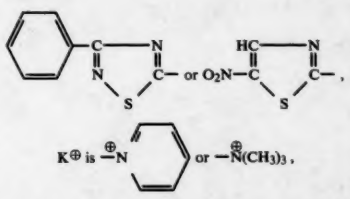
Int. Cl.[3] **C07C** *107/04;* **C09B** *44/02, 44/04*

U.S. Cl. 260—156 **5 Claims**

1. A compound of the formula



wherein D is



$K^{\oplus}$ is $\overset{\oplus}{=}N$ or $-\overset{\oplus}{N}(CH_3)_3$,

n is 1, 2 or 3, and $A^{n\ominus}$ is a non-chromophoric anion.

4,225,491

AZO PYRIDONE DYESTUFFS CONTAINING AT LEAST ONE REACTIVE PHOSPHORIC OR PHOSPHONIC ACID GROUP

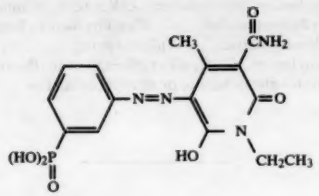
Donald R. Gauthier, Somerset, Mass., assignor to ICI United States, Inc., Wilmington, Del.

Filed Sep. 12, 1977, Ser. No. 832,374

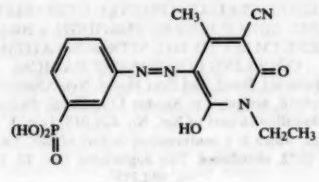
Int. Cl.[2] **C09B** *29/36, 62/82;* **D06P** *1/384, 3/66*

U.S. Cl. 260—156 **2 Claims**

1. An azo dyestuff having the formula:



2. An azo dyestuff having the formula:



4,225,492

WATER-SOLUBLE DISAZO DYESTUFFS, PREPARED FROM UNSYMMETRICAL HETEROCYCLIC DIAMINES

Wolfgang Bauer, Maintal, and Joachim Ribka, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,025

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1977, 2700805

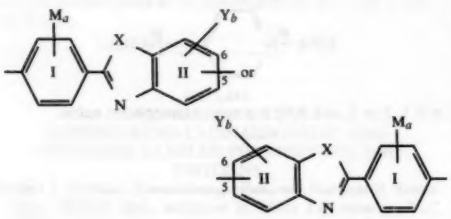
Int. Cl.[3] C09B *35/34*

U.S. Cl. 260—157 12 Claims

1. Disazo compound of the formula

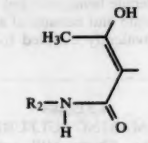
$$B_1\text{-}N{=}N\text{-}Z\text{-}N{=}N\text{-}B_2$$

wherein Z is

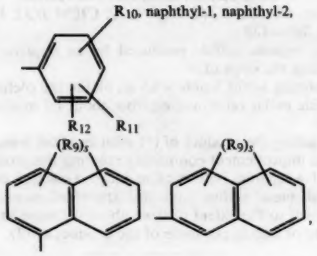


wherein Y and M are the same or different and are methyl, ethyl, methoxy, ethoxy and halogen, a and b are 0, 1 or 2, X is

—O— or —S—, R_1 is hydrogen, alkyl having one to 4 carbon atoms, phenyl or benzyl, B_1 is a CH-acid coupling component of the acetoacetic acid arylamide series of the formula



wherein R_2 is



R_{10}, naphthyl-1, naphthyl-2,

benzimidazolon-5-yl, halogen substituted benzimidazolon-5-yl or alkyl-substituted benzimidazolon-5-yl having 1 to 2 carbon atoms in the alkyl moiety, wherein R_{10}, R_{11} and R_{12} is independently from each other hydrogen, sulpho, carboxyl, nitro, amino, cyano, halogen, alkyl having 1 to 4 carbon atoms, hydroxyl, alkoxy having 1 to 4 carbon atoms or alkanoylamino having 1 to 4 carbon atoms in the alkanoyl moiety, R_9 is sulpho, and s is 1, 2 or 3, and B_2 is another coupling component radical which may be the same as B_1 or different with the proviso that said disazo compound contains at least one sulpho group or carboxyl group in the dyestuff molecule and the alkali metal salt, alkaline earth metal salt or ammonium salt thereof.

4,225,493

DISAZO DYESTUFFS DERIVED FROM THREE CARBOCYCLIC COMPONENTS INCLUDING A TERMINAL COMPONENT SUBSTITUTED WITH SULFO AND ALKOXY

Horst Nickel, and Fritz Suckfüll, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

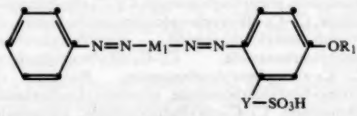
Continuation of Ser. No. 29,239, Apr. 16, 1970, abandoned. This application Oct. 14, 1975, Ser. No. 621,806

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1969, 1921046

Int. Cl.[3] C07C *107/04;* C09B *31/065, 43/00*

U.S. Cl. 260—186 2 Claims

1. Disazo dyestuff, which in the form of the free acid, corresponds to the formula



wherein

M_1 represents 1,4-phenylene;

R_1 is methyl or ethyl;

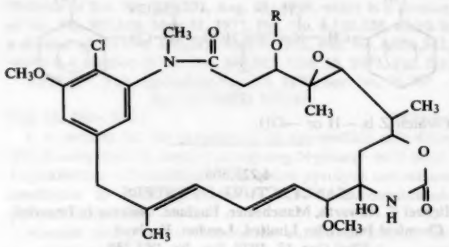
Y is a direct bond or methylene.

4,225,494
MAYTANSINOL ESTERS

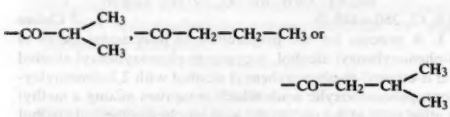
Eiji Higashide, Takarazuka; Mitsuko Asai, Takatsuki, and Seiichi Tanida, Kyoto, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 811,448, Jun. 29, 1977, Pat. No. 4,162,940. This application Dec. 22, 1978, Ser. No. 972,492
Claims priority, application Japan, Mar. 31, 1977, 52-37166; Apr. 1, 1977, 52-37886
Int. Cl.[2] C07D *498/18*
U.S. Cl. 260—239.3 P 4 Claims

1. Antibiotic C-15003 which has the formula:



wherein R represents

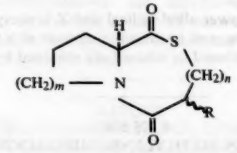


4,225,495
PYRROLO OR PYRIDO [2,1-c][1,4] THIAZINES OR THIAZEPINES

Miguel A. Ondetti, Princeton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 7, 1978, Ser. No. 967,335
Int. Cl.[3] C07D *513/02, 513/04*
U.S. Cl. 260—244.4 6 Claims

1. A compound having the formula



wherein R is hydrogen or alkyl of 1 to 7 carbon atoms; m is 1 or 2; and n is 0 or 1.

4,225,496
ACRYLIC LATEX COVE BASE CEMENT

Peter S. Columbus, Whitestone, and John Anderson, Brooklyn, both of N.Y., assignors to Borden, Inc., Columbus, Ohio

Filed Jul. 27, 1977, Ser. No. 819,467
Int. Cl.[3] C08K *3/22, 3/26*
U.S. Cl. 260—29.6 M 12 Claims

1. Cove base cement composition which spreads easily, grabs fast, gives strong and water resistant bonds, has a pleasant solvent-free odor, and is non-flammable and non-toxic, said composition comprising, on weight percent basis, 20 to 40% acrylic resin solids comprising polymerized acrylate esters, 40 to 60% calcium carbonate filler, 5 to 15% clay filler and enough water to yield a product having Brookfield viscosity of about 150,000 to 600,000 cps at 25° C.

4,225,497
PREPARATION OF N-SUBSTITUTED OLIGO-IMIDES

Michel Baudouin, Saint-Fons, and Jean Abblard, Saint-Didier Au Mont D'or, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 931,676, Aug. 7, 1978. This application Jan. 31, 1979, Ser. No. 8,053
Claims priority, application France, Feb. 19, 1978, 78 36383
Int. Cl.[2] C07D *207/44*
U.S. Cl. 260—326.5 FM 18 Claims

1. In a process for the preparation of an oligo-imide comprising reacting a dicarboxylic acid anhydride with an amine, the improvement which comprises conducting said reaction in the presence of a catalyst system comprising a mixture of a compound (α) and a compound (β), (α) being a strong inorganic or organic oxygen-containing acid, said acid bearing at least one acid functionality having an ionization constant in water which is not greater than 3, and (β) being a salt of such acid, with an organic cation selected from the group consisting of pyridinium nucleus cations, quaternary phosphonium cations and tertiary sulfonium cations.

4,225,498
PREPARATION OF N-SUBSTITUTED OLIGO-IMIDES

Michel Baudouin, Saint-Fons, and Jean Abblard, Saint-Didier-au-Mont-d'Or, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 7, 1978, Ser. No. 931,676
Claims priority, application France, Aug. 9, 1977, 77 25215
Int. Cl.[2] C07D *403/06, 403/02, 207/44*
U.S. Cl. 260—326.26 21 Claims

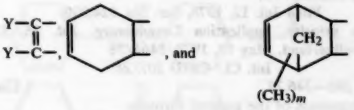
1. A process for the preparation of an oligoimide, comprising reacting a dicarboxylic acid anhydride with a amine, said anhydride being represented by the formula:

[II]

and said amine being represented by the formula:

[III]

in which formulae n is a positive integer which is less than or equal to 5, R is an organic radical of valency n, having not greater than 50 carbon atoms, and D represents a divalent radical selected from the group consisting of



in which m is equal to 0 or 1 and Y represents hydrogen, chlorine or methyl, said reaction being carried out in the presence of a catalyst system comprising a mixture of a compound (1) and a compound (2), (1) being a strong inorganic or organic acid having at least one oxygen atom present thereon and which possesses at least one acid functionality having an ionization constant in water which is not greater than 3, and (2) being an ammonium salt of said acid, the cationic ammonium moiety of said salt being at least di-N-substituted by organic radicals.

4,225,499

PROCESS FOR PREPARING 3-AZABICYCLO(3.1.0)HEXANE-2-CARBONITRILE

Willy D. Kollmeyer, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 6, 1978, Ser. No. 922,408
Int. Cl.[3] C07D *209/52*
U.S. Cl. 260—326.62 3 Claims

1. A method for preparing 3-azabicyclo(3.1.0)hexane-2-carbonitrile which consists of the steps:
(a) treating 3-azabicyclo(3.1.0)hexane with a compound containing active chloride, and forming a solution of 3-chloro-3-azabicyclo(3.1.0)hexane;
(b) treating said solution with an alcoholic solution of a strong inorganic base and filtering the resulting suspension to give a solution of 3-azabicyclo(3.1.0)hex-2-ene;
(c) treating said solution with sodium bisulfite in the presence of water to form the bisulfite adduct,
(d) treating the resulting mixture with an alkali metal cyanide to form 3-azabicyclo(3.1.0)hexane-2-carbonitrile, and
(e) isolating said 3-azabicyclo(3.1.0)hexane-2-carbonitrile.

4,225,500

NOVEL POLYMERIC COMPOSITIONS FOR FOOTWEAR TREAD MEMBERS CONTAINING A HALOGENATED POLYETHYLENE AND A BLOCK COPOLYMER

Charles G. Newton, Jr., Wenham, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Apr. 6, 1979, Ser. No. 27,874
Int. Cl.[2] C08K *5/01*; C08L *51/00, 53/00*
U.S. Cl. 260—33.6 AQ 17 Claims

1. A composition comprising a thermoplastic, elastomeric block copolymer(s) of a polystyrene—polyisoprene—polystyrene and/or a polystyrene—polybutadiene—polystyrene in an amount between about 20% to about 95% by weight of the composition; a halogenated polyethylene polymer having a halogen content between about 5% to about 50% by weight and the halogenated polyethylene polymer is present in an amount between about 1% to about 35% by weight of the composition; an extender oil or plasticizer in an amount between 0% to about 50% by weight of the composition and, a polystyrene material in an amount between 0% to about 15% by weight of the composition.

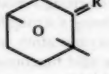
4,225,501

1,4-EPOXY-1,3,3-TRIMETHYL-2-(2-BUTEN-1-YLIDENE)-CYCLOHEXANES

Roman Kaiser, Uster, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Filed Jul. 12, 1978, Ser. No. 924,030
Claims priority, application Luxembourg, Jul. 25, 1977, 77834; Switzerland, May 19, 1978, 5464/78
Int. Cl.[3] C07D *307/28*
U.S. Cl. 260—346.22 4 Claims

1. Compounds of the general formula:



I

wherein R represents the 2-cis or the 2-trans-buten-1-ylidene group with the exception of natural mixtures containing compounds of formula I.

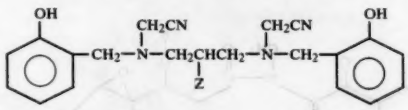
4,225,502

N,N'DI(HYDROXYBENZYL) 1,3-PROPANEDIAMINE N,N'-DIACETONITRILES

Roger R. Gaudette, Nashua, N.H.; John L. Ohlson, Bedford, and Patricia M. Scanlon, Arlington, both of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 630,792, Nov. 11, 1975, Pat. No. 4,069,249.
This application Feb. 7, 1977, Ser. No. 766,286
Int. Cl.[3] C07C *121/80*
U.S. Cl. 260—465 E 1 Claim

1. A compound having the formula:



in which Z is —H or —OH.

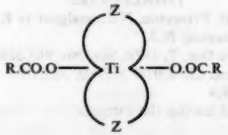
4,225,503

MANUFACTURE OF ESTERS

Michael S. Howarth, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 13, 1978, Ser. No. 951,259
Claims priority, application United Kingdom, Nov. 28, 1977, 49348/77
Int. Cl.[3] C07C *69/743, 69/747, 120/00*
U.S. Cl. 260—465 D 7 Claims

1. A process for the preparation of insecticidal esters of m-phenoxybenzyl alcohol, α-cyano-m-phenoxybenzyl alcohol and α-ethynyl-m-phenoxybenzyl alcohol with 2,2-dimethylcyclopropanecarboxylic acids which comprises mixing a methyl or ethyl ester of the carboxylic acid, m-phenoxybenzyl alcohol α-cyano-m-phenoxybenzyl alcohol or α-ethynyl-m-phenoxybenzyl alcohol and a transesterification catalyst which is a titanium compound of the formula:



wherein R is a lower alkyl radical and Z is acetylacetone or ethyl acetoacetate, and heating the mixture at a temperature such that the methanol or ethanol are removed by distillation as it is formed.

4,225,504

MONOMERIC N-METHYLENEAMINOACETONITRILE

E. Richard Young, Nashua, N.H., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 25, 1978, Ser. No. 954,608
Int. Cl.[2] C07C *121/42, 120/00*
U.S. Cl. 260—465.5 A 8 Claims

1. A process for the production of N-Methyleneaminoacetonitrile the steps consisting of:
(a) forming an aqueous solution of glycinonitrile which is free of ammonia:
(b) slowly introducing sufficient aqueous formaldehyde into said solution to produce at least an equimolar quantity with said glycinonitrile;
(c) maintaining the temperature of said aqueous mixture in the range of from about 0° C. to about 50° C.; and
(d) allowing said formaldehyde to react with said glycinonitrile until the product is formed.

6. A compound having the empirical formula $C_3H_4N_2$, a

white color, a melting point in the range of about 167° C. to about 170° C. and the infrared spectrum of FIG. 1 and being sparingly soluble in water said compound being a monomeric compound having the formula $H_2C{=}N{-}CH_2{-}CN$.

4,225,505

PYROLYSIS OF N-SUBSTITUTED-1-CYCLOHEXENE-1,2-DICARBOXIMIDES AND HYDROLYSIS OF PRODUCT TO PYROMELLITIC ANHYDRIDE

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 935,201, Aug. 21, 1978, which is a division of Ser. No. 802,168, May 31, 1977, Pat. No. 4,125,536, which is a division of Ser. No. 603,221, Aug. 8, 1975, Pat. No. 4,056,542, which is a division of Ser. No. 360,962, May 16, 1973, Pat. No. 3,932,457. This application Sep. 18, 1979, Ser. No. 76,707

Int. Cl.³ C07D *307/89*

U.S. Cl. 260—346.3 **3 Claims**

1. A process for the preparation of pyromellitic anhydride which comprises the steps of pyrolyzing N-phenyl- or N-alkyl-1-cyclohexene-1,2-dicarboximides under pyrolysis conversion conditions to N,N'-diphenyl- or N,N'-dialkyl-substituted-pyromellitdiimides,

wherein said pyrolysis conversion conditions include elevated temperatures in the range of about 500° C. to 1000° C., reduced pressure, and short contact time, effective for said pyrolysis, and

solvolyzing under hydrolysis conditions said N,N'-diphenyl- or N,N'-dialkyl-substituted-pyromellitdiimides to said pyromellitic anhydride.

4,225,506

PROCESS FOR MANUFACTURING A DIKETONE

Max Schmid, Brugg, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 14, 1979, Ser. No. 38,760

Claims priority, application Switzerland, May 30, 1978, 5883/78

Int. Cl.³ C07D *307/60*

U.S. Cl. 260—343.6 **10 Claims**

1. A process for manufacturing dihydro-4,4-dimethyl-2,3-furandione, which process comprises oxidizing dihydro-3-hydroxy-4,4-dimethyl-2(3H)-furanone with a solid alkali metal hypochlorite or a solid alkaline earth metal hypochlorite, said oxidation occurring in a solvent in which dihydro-3-hydroxy-4,4-dimethyl-2(3H)-furanone and dihydro-4,4-dimethyl-2,3-furandione are substantially soluble therein but in which said alkali-metal hypochlorite or alkaline earth metal hypochlorite is substantially insoluble therein.

4,225,507

19-HYDROXY-19-METHYL-PGI$_2$ COMPOUNDS

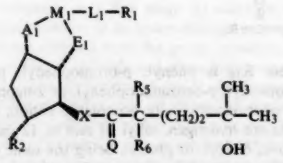
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 5, 1979, Ser. No. 54,720

Int. Cl.² C07D *307/93*

U.S. Cl. 260—346.22 **6 Claims**

1. A prostacyclin-type compound of the formula



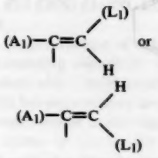
wherein A_1 is —O— (oxa) and E_1 is $-CH_2-$

wherein L_1 is

(1) $-(CH_2)_n-$ wherein n is one to 5, inclusive, or

(2) $-(CH_2)_p-CF_2-$ wherein p is 2, 3, or 4, with the proviso that,

wherein M_1 is



(1)

(2)

wherein ~ indicates attachment in alpha or beta configuration,

wherein Q is

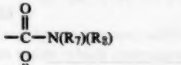
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

wherein R_1 is

(1) $-COOR_3$

(2) $-CH_2OH$

(3) $-CH_2N(R_7)(R_8)$



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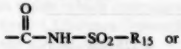

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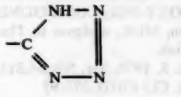
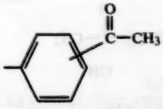
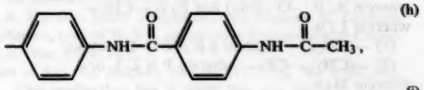


(6)

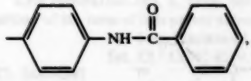
wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;



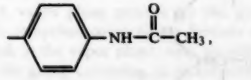
(g)



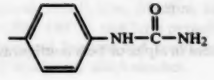
(h)



(i)



(j)



(k)

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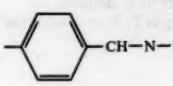
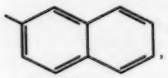
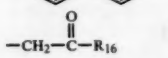

(l)


(m)


(n)

wherein

R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive,

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and wherein X is

(1) trans-CH=CH—

(2) cis-CH=CH—

(3) —C≡C— or

(4) $—CH_2CH_2—$.

4,225,508

19-HYDROXY-PGI$_2$ COMPOUNDS

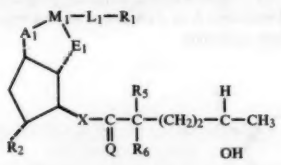
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 5, 1979, Ser. No. 54,811

Int. Cl.[2] **C07D** *307/93*

U.S. Cl. 260—346.22 **12 Claims**

1. A prostacyclin-type compound of the formula



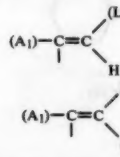
wherein A_1 is —O—(oxa) and E_1 is $—CH_2—$

wherein L_1 is

(1) $—(CH_2)_n—$ wherein n is one to 5, inclusor

(2) $—(CH_2)_p—CF_2—$ wherein P is 2, 3, or 4,

wherein M_1 is


(1)

(2)

wherein ~ indicates attachment in alpha or beta configuration, wherein Q is

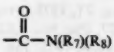
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,

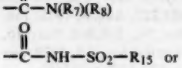
wherein R_1 is

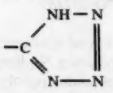
(1) $—COOR_3$

(2) $—CH_2OH$

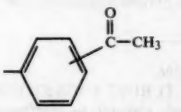
(3) $—CH_2N(R_7)(R_8)$

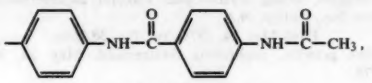

(4)

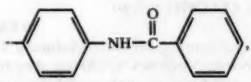

(5)

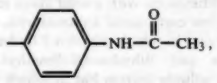

(6)

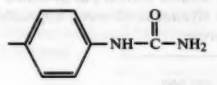
wherein R_3 is (a) hydrogen, (b) alkyl of one to 12 carbon atoms, inclusive, (c) cycloalkyl of 3 to 10 carbon atoms, inclusive, (d) aralkyl of 7 to 12 carbon atoms, inclusive, (e) phenyl, (f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;

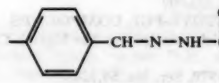

(g)

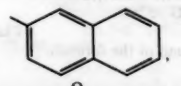

(h)

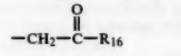

(i)


(j)


(k)


(l)


(m)


(n)

wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl substituted with one, 2,

or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive,

wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,

wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and wherein X is

(1) trans-CH=CH—

(2) cis-CH=CH—

(3) -C≡C— or

(4) $—CH_2CH_2—$.

4,225,509

PROCESS FOR PRODUCING OVERBASED ALKALINE EARTH HYDROCARBYL SULFONATES

Kishankumar K. Seth, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 2, 1979, Ser. No. 81,208

Int. Cl.[3] C07C *143/24, 139/00*

U.S. Cl. 260—505 N **8 Claims**

1. In a process for making an overbased alkaline earth metal hydrocarbyl sulfonate, said process comprising the steps of

(1) adding an alkaline earth metal base selected from the group consisting of oxides and hydroxides of calcium, magnesium and barium and mixtures thereof to a hydrocarbyl sulfonic acid or alkaline earth metal salt thereof,

(2) adding a lower alkanol promoter,

(3) injecting carbon dioxide into the mixture,

(4) distilling to remove volatiles, and

(5) removing solids to obtain a clear overbased alkaline earth metal hydrocarbonyl sulfonate,

the improvement comprising (a) mixing said solids obtained in step (5) with an aqueous acid which forms a water-soluble alkaline earth metal salt thereby dissolving basic alkaline earth metal compound in said solids, (b) separating the resultant mixture into an aqueous phase and an organic phase and (c) removing said organic phase containing hydrocarbyl sulfonic acid.

4,225,510

PREPARATION OF PERCHLORO-2,5-DIAZA-1,5-HEXADIENE

Hermann D. Krall, Meerbusch, and Herbert Schwarz, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 29, 1978, Ser. No. 974,413

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803124

Int. Cl.[2] C07C *119/00*

U.S. Cl. 260—566 D **8 Claims**

1. In the preparation of perchloro-2,5-diaza-1,5-hexadiene by chlorination of N,N-dimethylaminoacetonitrile, the improvement which comprises in a first stage (a) chlorinating N,N-dimethylaminoacetonitrile or its hydrochloride at about 70° to 80° C. in a solvent selected from the group consisting of thionyl chloride, sulphuryl chloride and phosphorus oxychloride, removing the solvent by distillation under chlorinating conditions until a bottom temperature of about 120° to 160° C. is reached, and after-treating the residual reaction mixture at this temperature with chlorine, and in a second stage (b) chlorinating the resulting reaction mixture at a temperature from about 150° to 220° C.

4,225,511

DIRECT OXIMATION OF KETONES USING GALLIA CATALYSTS

John N. Armor, Morris Plains, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 895,325, Apr. 11, 1978, Pat. No. 4,163,756. This application Apr. 16, 1979, Ser. No. 30,192

Int. Cl.[2] C07C *131/00, 131/04*

U.S. Cl. 260—566 A **6 Claims**

1. Direct process for production of oxime which comprises passing a mixture consisting essentially of ammonia, oxygen and a ketone in contact with a solid catalyst consisting essentially of gallium oxide having a surface area of at least 1 square meter per gram, at temperature in the range of 50° C.–500° C., thereby producing oxime in recoverable form as a reaction product.

4,225,512

TERNARY SALTS OF TRIS(AMINOMETHYL)PHOSPHINES AND THEIR OXIDES PREPARED BY THE HYDROLYSIS OF 1,3,5-TRIAZA-7-PHOSPHAADAMANTANE AND ITS OXIDE

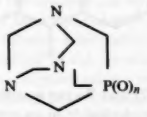
Arlen W. Frank, Slidell; Donald J. Daigle, New Orleans, and Russell M. H. Kullman, Harahan, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 964,854, Nov. 29, 1978. This application Jul. 26, 1979, Ser. No. 61,169

Int. Cl.[2] C07C *85/20*

U.S. Cl. 260—583 E **3 Claims**

1. A process for preparing ternary salts of tris(aminomethyl)-phosphine and its oxide which comprises hydrolyzing a compound selected from 1,3,5-triaza-7-phosphaadamantane and its 7-oxide having the formula;



wherein n is an integer from 0 to 1, with three or more parts of a hydrohalic acid, HX, where X is a halogen, until all three of the N—CH_2N bonds are cleaved, and recovering the product therefrom.

4,225,513

CATALYTIC DECARBONYLATION OF ESTERS

David J. Trecker, South Charleston, and Michael R. Sandner, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 366,440, Jun. 4, 1973, Pat. No. 4,093,661. This application Jun. 5, 1978, Ser. No. 912,873

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.[3] C07C *45/41*

U.S. Cl. 568—397 **8 Claims**

1. A vapor phase process for the production of ketones, which comprises contacting a formate of a secondary alkyl alcohol, in the vapor phase, with an oxide of a metal selected from the group consisting of nickel, chromium, zinc, copper, manganese, cobalt, iron, titanium, and vanadium, at a temperature of 280–420° C. and for a period of time sufficient to decarbonylate said formate and produce the ketone corresponding to said secondary alkyl alcohol.

4,225,514
PROCESS FOR PREPARATION OF POLYENE ALDEHYDES

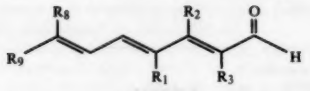
Gary L. Olson, Westfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 849,148, Nov. 7, 1977, abandoned, which is a division of Ser. No. 731,056, Oct. 8, 1976, Pat. No. 4,071,538, which is a division of Ser. No. 618,708, Oct. 1, 1975, Pat. No. 3,997,529, which is a continuation-in-part of Ser. No. 594,377, Jul. 9, 1975, abandoned. This application Jun. 21, 1978, Ser. No. 917,607

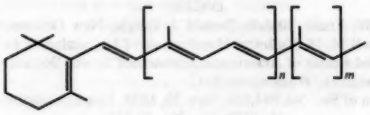
Int. Cl.[3] C07C *45/60*

U.S. Cl. 568—447 5 Claims

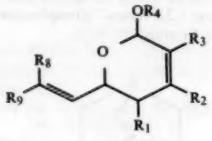
1. A process for preparing a compound of the formula:



wherein R_1, R_2, R_3 and R_8 each are hydrogen or methyl, R_9 is



and m and n are 0 or 1; said process comprising treating a compound of the formula:



wherein R_1, R_2, R_3, R_8 and R_9 are as above and R_4 is lower alkyl; with an amine hydrohalide in an aprotic solvent.

4,225,515
ISOMERIC HYDROXYMETHYL-FORMYL-TRICYCLO[5,2,1,$0^{2,6}$]-DECANE MIXTURE AND PROCESS FOR MANUFACTURE THEREOF

Jürgen Weber, Oberhausen, and Heinz Grau, Schwäbisch Gmünd, both of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

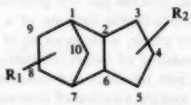
Division of Ser. No. 799,114, May 20, 1977, Pat. No. 4,146,505. This application Oct. 25, 1978, Ser. No. 954,682

Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623285

Int. Cl.[2] C07C *47/34, 45/08*

U.S. Cl. 568—444 2 Claims

1. An isomeric hydroxymethylformyltricyclo(5,2,1,$0^{2,6}$)-decane mixture of the formula



wherein

R_1 and R_2 are the hydroxymethyl CH_2OH of the formyl CHO group and

R_1 represents CH_2OH, when R_2 is CHO and vice versa wherein each component of the isomeric mixture contains both a hydroxymethyl and a formyl group and the hydroxymethyl group is in the 3, 4 or 5 position when the formyl group occupies position 8 or 9 and the formyl group is in the 3, 4 or 5 position when the hydroxymethyl group is in position 8 or 9.

2. Process for the manufacture of the product according to claim 1 comprising the hydroformylation of dicyclopentadiene to diformyltricyclodecane at temperatures of 100° to 130° C., pressures of 250 to 350 bar and in presence of cobalt or rhodiumcatalysts and partial hydrogenation of the dialdehyde at temperatures of 100° to 130° C. and a hydrogen pressure of 100 bar.

4,225,516
PROCESS FOR THE MANUFACTURE OF BETA-METHYLTHIOPROPIONALDEHYDE

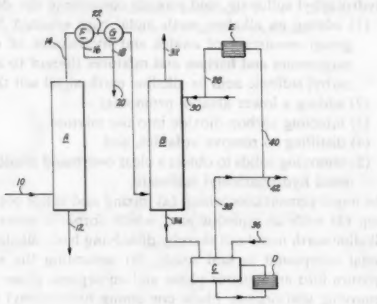
Georges Biola, Venissieux; Yves Komorn, Lyons, and Eric Limongi, Villeurbanne, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jun. 15, 1976, Ser. No. 696,432

Claims priority, application France, Jun. 20, 1975, 75 20183

Int. Cl.[3] C07C *47/02, 151/00*

U.S. Cl. 568—41 16 Claims



1. A method for producing beta-methylthiopropionaldehyde from methylmercaptan and an acrolein-containing gas comprising the steps of:

(a) absorbing acrolein in a feedstream of betamethylthiopropionaldehyde; and,

(b) reacting the mixture (a) with methylmercaptan in the substantial absence of water at a temperature within the range of from about 10° C. to about 50° C., wherein the reaction is accompanied by the formation of hemithioacetal as an intermediate.

4,225,517
PROCESS FOR THE PRODUCTION OF ACETALDEHYDE BY THE REACTION OF METHANOL WITH SYNTHESIS GAS

Brian R. Gane, Weybridge, England, assignor to The British Petroleum Company Limited, London, England

Filed Nov. 6, 1978, Ser. No. 957,701

Claims priority, application United Kingdom, Nov. 8, 1977, 46329/77; May 13, 1978, 19414/78

Int. Cl.[3] C07C *45/49, 47/06*

U.S. Cl. 568—487 14 Claims

1. A process for the production of acetaldehyde which process comprises reacting at a temperature of from about 150° to 250° C. and a pressure of from about 80 to 300 bar, methanol with hydrogen and carbon monoxide in the presence of:

(a) a catalyst comprising cobalt, an iodide or a bromide and a compound of the formula

wherein X is arsenic, antimony or bismuth and A, B and C are individually an hydrocarbyl radical of 1 to 20 carbon atoms or any two of A, B and C together form an organic divalent cyclic ring system bonded to the X atom, and

(b) at least one additive selective from:

(i) an inert liquid selected from the group consisting of phenyl halides, thiophenes, long chain acids, and silicone oils;

(ii) acids and derivatives thereof having the formula

(I)

wherein the substituent R is a hydrocarbyl group or an oxygen-containing hydrocarbyl group and the substituent X is the group —OR′ wherein R′ is a hydrogen atom, a hydrocarbyl group or an oxygen-containing hydrocarbyl group or X is the group —O—CO—R^2 wherein R^2 is a hydrocarbyl group or an oxygen-containing hydrocarbyl group;

(iii) oxygen-containing organic compounds selected from the group consisting of aliphatic, alicyclic or aromatic ethers, aliphatic alcohols, aliphatic ketones and aliphatic aldehydes; and

(iv) non-polar solvents selected from the group consisting of alkanes, benzene or alkyl substituted benzenes.

4,225,518

PURIFICATION OF META-CHLORONITROBENZENE

James A. Cook, Jr., Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 4, 1978, Ser. No. 965,805

Int. Cl.² C07C *79/12*

U.S. Cl. 568—937 **9 Claims**

1. A process for enriching the meta-chloronitrobenzene content of a chloronitrobenzene isomer mixture, which comprises dispersing a liquid chloronitrobenzene isomer mixture containing meta-chloronitrobenzene as the major isomer into a partially miscible solvent having a temperature below the melting point of meta-chloronitrobenzene, said solvent and its temperature being selected so that the isomer mixture is sparingly soluble in said solvent, the weight ratio of said solvent to said isomer mixture being between about 1:1 and about 100:1, thereby forming a particulate chloronitrobenzene solid enriched in meta-chloronitrobenzene content.

4,225,519

DEHYDROCHLORINATION PROCESS

Arthur E. Reinhardt, III, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 852,897, Nov. 18, 1977, Pat. No. 4,144,192. This application Dec. 18, 1978, Ser. No. 970,674

Int. Cl.² C07C *17/34*

U.S. Cl. 260—654 D **6 Claims**

1. In a process for dehydrochlorinating 1,1,2-trichloroethane in the vapor phase and in the presence of a dehydrochlorination catalyst to produce vinylidene chloride, the improvement wherein cesium nitrate is used as the dehydrochlorination catalyst.

4,225,520

PROCESS FOR THE MANUFACTURE OF VINYL CHLORIDE

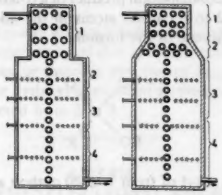
Josef Riedl; Walter Fröhlich, both of Burgkirchen, and Erich Mittermaier, Tüssling, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 564,038, Apr. 1, 1975, abandoned. This application Oct. 1, 1976, Ser. No. 728,715

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1974, 2416786

Int. Cl.² C07C *21/02*

U.S. Cl. 260—656 R **4 Claims**



1. In the process for the manufacture of vinyl chloride by pyrolytic decomposition of 1,2-dichloroethane in a furnace with a coiled up reaction tube, the furnace having a convection, a vaporization, a heating and a cracking zone from top to bottom and having upper and lower rows of burners, separating high-boiling constituents from 1,2-dichloroethane in a column preceding the furnace, passing the 1,2-dichloroethane through the reaction tube from top to bottom both the convection and the vaporizing zones being above the upper rows of burners carrying out the pyrolysis at a temperature of 480° C. to 510° C., separating hydrogen chloride and subsequently vinyl chloride from the cracked gas by distillation, recycling the sump product of the vinyl chloride separation to the column preceding the furnace while adding gaseous chlorine in the absence of a catalyst to the recycled sump product, the improvement which comprises using a reaction tube having an internal diameter of from 12 to 16 cm, and supplying through the upper rows of burners an amount of heat that is 1.8 to 2.2 times the amount of heat supplied through the lower rows of burners whereby rapid clogging by carbonization is prevented and operating periods are prolonged.

4,225,521

HERBICIDAL PHOSPHONATES

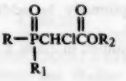
Richard F. Sauers, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 917,388, Jun. 23, 1978, abandoned. This application Aug. 1, 1978, Ser. No. 930,603

Int. Cl.² C04F *9/02*

U.S. Cl. 260—941 **8 Claims**

1. A compound of the formula



wherein

R is C_1–C_4 alkyl or phenyl;

R_1 is C_1–C_4 alkoxy; and

R_2 is alkyl of 1 to 6 carbons, alkenyl of 3 to 4 carbons, cycloalkyl of 5–6 carbons or said cycloalkyl substituted with methyl.

4,225,522
COPOLYCONDENSATION PRODUCTS OF β-HALOALKYL PHOSPHATES AND DIALKYL PHOSPHONATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 858,316, Dec. 7, 1977, Pat. No. 4,152,371, which is a division of Ser. No. 811,972, Jul. 5, 1977, Pat. No. 4,086,303, which is a continuation-in-part of Ser. No. 783,995, Apr. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 558,862, Mar. 17, 1975, abandoned, which is a continuation-in-part of Ser. No. 410,583, Nov. 12, 1973, abandoned. This application Jan. 2, 1979, Ser. No. 229

Int. Cl.[2] C07F 9/40

U.S. Cl. 260—978 5 Claims

1. A copolycondensation product of a α-haloalkyl phosphate having from 2 to 4 carbon atoms in the alkyl moiety and a dialkyl phosphonate of the formula

in which R′ is alkyl of from 1 to 20 carbon atoms, alkenyl of from 3 to 20 carbon atoms, or phenyl optionally substituted with alkyl of from 1 to 4 carbon atoms and/or halogen, and R is alkyl of from 1 to 4 carbon atoms, said product being obtained by the steps of (1) heating the phosphate with the dialkyl phosphonate until at least about 1 molar equivalent of alkyl halide is evolved, to obtain a crude polycondensation product having acidic structures, and (2) substantially neutralizing said acidic structures by heating the crude product with an epoxide or an orthoester.

4,225,523
ANTHRAQUINONE DYESTUFFS

Dennis Eckersley, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

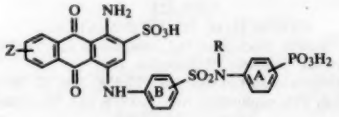
Filed Aug. 7, 1979, Ser. No. 64,527

Claims priority, application United Kingdom, Oct. 9, 1978, 39812/78

Int. Cl.[2] C07C 143/665

U.S. Cl. 260—371 9 Claims

1. An anthraquinone dyestuff which in the free acid form is of the formula:



(I)

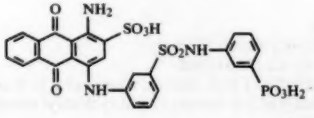
where

Z is H or SO_3H,

R is H, C_{1-4}alkyl or hydroxy C_{1-4}alkyl,

the ring A may optionally be additionally substituted by OCH_3 and/or SO_3H.

9. A dyestuff as claimed in claim 1 of the formula:



4,225,524
STEROID DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Kiyoshige Ochi, Kawagoe; Isao Matsunaga; Minoru Shindo, both of Tokyo, and Chikara Kaneko, Kanazawa, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

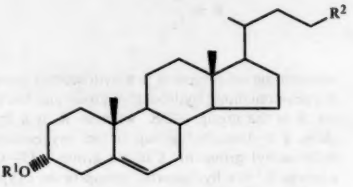
Filed Jun. 14, 1978, Ser. No. 915,988

Claims priority, application Japan, Jun. 24, 1977, 52-74526; Aug. 24, 1977, 52-100591

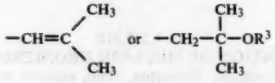
Int. Cl.[3] C07J 9/00

U.S. Cl. 260—397.2 19 Claims

1. A process for preparing a steroid derivative represented by the formula

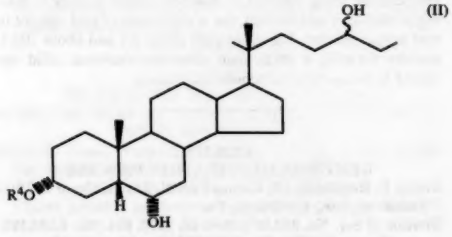


wherein R^1 is hydrogen or a protecting group for hydroxyl radical and R^2 is



in which R^3 is hydrogen or a protecting group for hydroxyl radical, which comproses a method selected from the class consisting of:

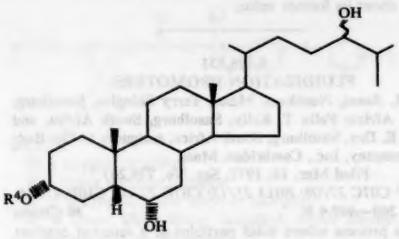
(1) reacting a compound represented by the formula



(II)

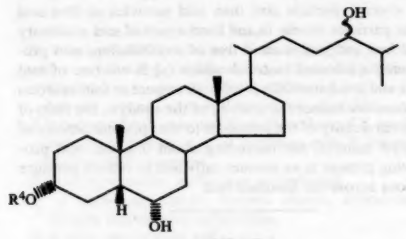
wherein R^4 is a protecting group for hydroxy radical, with an acid selected from the group consisting of phosphorus oxychloride, thionyl chloride, methane sulfonic acid, p-toluenesulfonic acid, methane sulfonylchloride, p-toluenesulfonyl chloride, phosphoric anhydride and sulfuric acid; and, optionally, hydrolyzing the product;

(2) reacting a compound represented by the formula

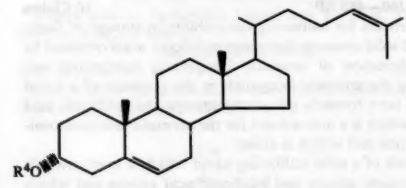


wherein R^4 is as defined above, with methanesulfonyl chloride or p-toluenesulfonyl chloride, heating the product to subject it to eliminating reaction and, optionally, hydrolyzing the product; or

(3) reacting a compound represented by the formula



wherein R^4 is as defined above, with an acid selected from the group consisting of phosphorus oxychloride, thionyl chloride, methane sulfonic acid, p-toluenesulfonic acid, methane sulfonylchloride, p-toluenesulfonyl chloride, phosphoric anhydride and sulfuric acid; reacting the resulting compound represented by the formula



wherein R^4 is as defined above with a mercuric salt, reducing the resulting compound with an alkali metal borohydride and, optionally, hydrolyzing the product.

4,225,525

VITAMIN D_3 METABOLITE DERIVATIVES

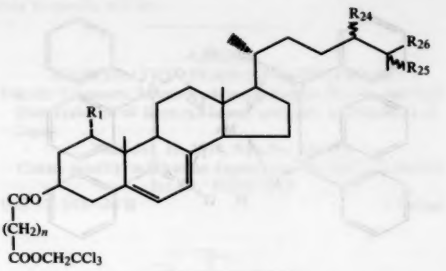
Enrico G. Baggiolini, Bloomfield, and Milan R. Uskokovic, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Feb. 8, 1979, Ser. No. 10,448

Int. Cl.³ C07J 9/00

U.S. Cl. 260—397.2 **6 Claims**

1. A compound of the formula



where R_1, R_{24}, R_{25} and R_{26} each independently are hydrogen hydroxy, or fluorine provided that at least one of R_1-R_{24}, R_{25} and R_{26} is hydroxy or fluorine, any two of R_{24}, R_{25} and R_{26} taken together are hydroxys protected as the acetonide, and n is an integer selected from 2 or 3.

4,225,526

8-[(4-AMINOPHENYL)SULFONYL]AMINO-2-NAPHTHALENYL PHOSPHORODIAMIDATE

Robert J. Alaimo, and Ozra E. Millner, Jr., both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,127

Int. Cl.² C07C 143/82

U.S. Cl. 260—397.7 R **1 Claim**

1. The compound 8-[(4-Aminophenyl)sulfonyl]amino-2-naphthalenyl phosphorodiamidate.

4,225,527

POLYENE COMPOUNDS

Werner Bollag, Basel; Rudolf Rüegg, Bottmingen, and Gottlieb Ryser, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

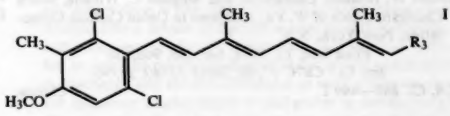
Filed Dec. 15, 1977, Ser. No. 861,085

Claims priority, application Austria, Dec. 20, 1976, 9444/76; Switzerland, Oct. 11, 1977, 12388/77

Int. Cl.³ C11C 3/00

U.S. Cl. 260—408 **3 Claims**

1. A compound of the formula:



wherein R_3 is alkoxycarbonyl with its alkoxy moiety having 1 to 6 carbon atoms,

or a salt thereof.

4,225,528

MANGANESE COMPLEXES OF PHENYL BENZOIN IN OXIME CATALYSTS

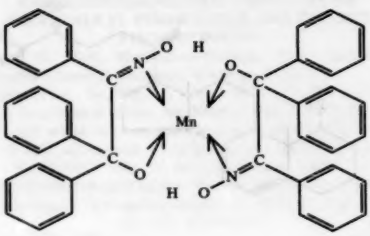
Eugene G. Banucci, Scotia, and Walter K. Olander, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 753,507, Dec. 21, 1976, Pat. No. 4,093,598. This application Feb. 22, 1978, Ser. No. 880,136

Int. Cl.² C07F 13/00

U.S. Cl. 260—429 J **1 Claim**

1. A manganese complex of the formula:



4,225,529
COMPOSITIONS CONTAINING PLATINUM

Paul C. Hydes, and Bernard W. Malerbi, both of Reading, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Oct. 17, 1978, Ser. No. 952,982

Claims priority, application United Kingdom, Oct. 19, 1977, 43491/77; May 18, 1978, 20463/78; Jul. 12, 1978, 29630/78

Int. Cl.[2] C07F *15/00*

U.S. Cl. 260—429 R **4 Claims**

1. A cis-coordination compound of platinum having the structure:

in which X and Y are the same or different ligands selected from sulphate, phosphate, nitrate, oxalate, halogen-substituted acetate and water or together form a dicarboxylate ligand selected from the group consisting of succinato, glutarato, adipato, pimelato, malato and phthalato ligands and A and B are the same or different straight-chain aliphatic amines selected from the group consisting of n-propylamine, n-butylamine and n-pentylamine coordinated to the Pt through their N atoms, such that the platinum is present as Pt^{2+}.

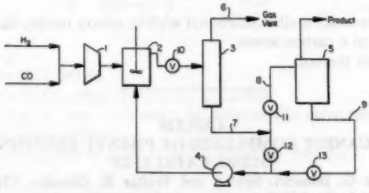
4,225,530
RHODIUM CATALYST REGENERATION BY CARBON MONOXIDE TREATMENT

Robert W. Beisner, Charleston, and Stephen C. Winans, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 11, 1978, Ser. No. 968,400

Int. Cl.[2] C07C *27/06*; B01J *31/40, 23/96*

U.S. Cl. 260—449 L **3 Claims**



1. In a process for continuously producing alkane polyols by the reaction of hydrogen and carbon monoxide in a homogeneous liquid phase mixture containing a rhodium carbonyl complex catalyst, the mole ratio of H_2/CO in the reactant gas being above about 0.1, the improvement which comprises periodically lowering the H_2/CO mole ratio in the reactant gas to about 0.1 or less and thereafter increasing the H_2/CO mole ratio to about its former value.

4,225,531
FLUIDIZATION PROMOTERS

David H. Jones, Needham, Mass.; Terry Shingles, Sasolburg, South Africa; Felix T. Kelly, Sasolburg, South Africa, and Mark E. Dry, Sasolburg, South Africa, assignors to The Badger Company, Inc., Cambridge, Mass.

Filed Mar. 18, 1977, Ser. No. 779,237

Int. Cl.[3] C07C *27/06*; B01J *21/18*; C07C *27/06*; C10B *47/24*

U.S. Cl. 260—449.6 R **24 Claims**

1. In a process where solid particles of a selected catalyst material are maintained as a fluidized bed in a reactor and used to catalyze a selected chemical reaction whereby at least one predetermined gaseous organic compound is produced in said reactor from one or more reactants supplied to said reactor in gaseous form, the method of improving the quality of fluidization which comprises admixing and fluidizing with said particles a solid fluidization promoter of lower apparent density and smaller average particle size than said particles so that said promoter particles remain in and form a part of said stationary fluidized bed and said mass is free of stratification, said promoter being a selected material which (a) is not one of said reactants and is substantially inert with respect to said reaction and (b) does not reduce the activity of the catalyst, the ratio of the apparent density of the promoter to the apparent density of the catalyst material not exceeding about 0.6, and said promoter being present in an amount sufficient to reduce pressure fluctuations across the fluidized bed.

4,225,532
STABILIZED PREPARATIONS OF AROMATIC ISOCYANATOSULPHONIC ACIDS

Dieter Dieterich, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,251

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807458

Int. Cl.[2] C07C *119/048*

U.S. Cl. 260—453 SP **10 Claims**

1. A process for increasing the stability in storage of finely dispersed solid aromatic isocyanatosulphonic acids obtained by the sulphonation of aromatic isocyanates comprising sulphonating the aromatic isocyanate in the presence of a liquid which is inert towards isocyanate groups and sulphonic acid groups, which is a non-solvent for the aromatic isocyanatosulphonic acids and which is either

(a) a melt of a solid stabilizing agent which is inert towards isocyanate groups and sulphonic acid groups and which has a melting point above about 26° C. or

(b) at least a 10% by weight solution of the solid stabilizing agent of (a) in a solvent which is inert towards isocyanatosulphonic acids,

characterized in that said solid stabilizing agent remains in the sulphonation product after termination of the sulphonation reaction in an amount between about 5% and 60% by weight, based on the weight of the sulphonation product.

4,225,533
FLUOROBENZYL ESTERS OF CYCLOPROPANECARBOXYLIC ACIDS

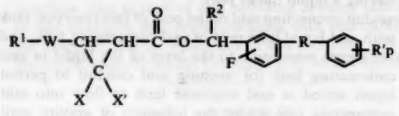
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 942,509, Sep. 15, 1978. This application Jun. 1, 1979, Ser. No. 44,732

Int. Cl.[3] C07C *69/74, 69/76, 121/66, 121/75*

U.S. Cl. 260—465 D **14 Claims**

1. A compound of the formula (A):


(A)

wherein:
W is oxygen or sulfur;
X is lower alkyl or halogen;
X' is hydrogen, lower alkyl or halogen;
R^1 is lower alkyl, lower haloalkyl, lower alkenyl, lower haloalkenyl, or the group

in which,
t is zero, one, two, three or four;
Y is independently selected from hydrogen, lower alkyl, lower haloalkyl, lower alkoxy, lower alkylthio, lower alkylcarboxyl, lower alkoxycarbonyl, lower aryloxy, halogen, cyano, nitro and lower haloalkylthio;
Z is independently selected from the values of Y, cycloalkyl, and lower haloalkoxy; or together with Y forms a methylenedixoy group;
R is oxygen, sulfur, methylene or carbonyl;
R' is hydrogen, fluoro, bromo, chloro, trifluoromethyl, methyl, methoxy or methylthio;
p is zero, one or two; and
R^2 is hydrogen, cyano, methyl or ethynyl.

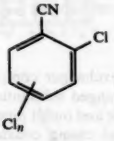
4,225,534

PROCESS FOR THE PRODUCTION OF 2-CHLOROBENZONITRILE DERIVATIVES

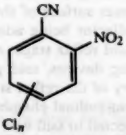
Hiroshi Yoshikawa, Takasaki, Japan, assignor to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1979, Ser. No. 46,371
Claims priority, application Japan, Jun. 12, 1978, 53-69836; Oct. 11, 1978, 53-124875
Int. Cl.[2] C07C *121/52*
U.S. Cl. 260—465 G **10 Claims**

1. A process for producing 2-chlorobenzonitrile derivatives represented by the general formula (I):


(I)

(wherein n is a number of 1 or 2)
characterized by reacting a compound of the general formula (II):


(II)

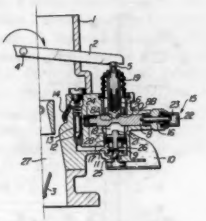
(wherein Cl_n is as defined above)
with lithium chloride or a mixture of lithium chloride and anhydrous aluminum chloride or with lithium aluminum chloride in aprotic solvent.

4,225,535

ACCELERATION PUMP OF CARBURETOR

Takeshi Takamaru; Mineo Kashiwaya; Kiyomi Morita, and Seiji Oobayashi, all of Katsuta, Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 19, 1978, Ser. No. 926,112
Claims priority, application Japan, Aug. 25, 1977, 52-102041
Int. Cl.[3] F02M *7/08*
U.S. Cl. 261—34 B **4 Claims**



1. An acceleration pump of a carburetor comprising:
a throttle valve located in a mixture conduit of a carburetor body;
a pump cylinder formed in the carburetor body and charged with acceleration fuel;
a piston operative to discharge the fuel from said pump cylinder into said mixture conduit in response to an opening action of said throttle valve; and
temperature-fuel compensating means operative to control the operation of said piston in such a manner that said piston initiates discharge of the fuel from said pump cylinder at a first degree of opening of said throttle valve which is higher when ambient temperature is high than when ambient temperature is low and said piston terminates discharge of the fuel from said pump cylinder at a second degree of opening of said throttle valve which is lower when ambient temperature is high than when ambient temperature is low;
wherein the amount of fuel discharged by said piston is determined by said first and second degrees of opening of said throttle valve in such a manner that the fuel can be reduced in amount when ambient temperature is high as compared with the amount of fuel discharged when ambient temperature is low, and wherein said temperature-fuel compensating means comprises a heat sensitive element, and a stopper member driven by said heat sensitive member to vary the maximum displacement of said piston both in discharge and suction directions in such a manner that the maximum displacement of said piston in the discharge direction is smaller when ambient temperature is high than when ambient temperature is low and the maximum displacement of the piston in the suction direction is greater when ambient temperature is low than when ambient temperature is high.

4,225,536

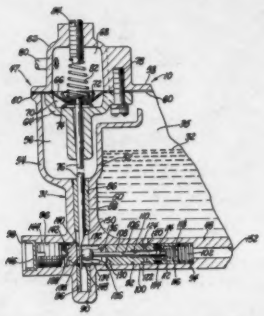
POWER VALVE

Michael Dougherty, East Detroit, and Russell J. Wakeman, Novi, both of Mich., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,353
Int. Cl.[2] F02M *7/20*
U.S. Cl. 261—69 R **9 Claims**

1. A power valve assembly for use in combination with carburetor means for an internal combustion engine, said power valve assembly comprising power valve body means, a

power valving member movable relative to said power valve body means, said power valving member and said power valve body means cooperating to define therebetween flow orifice means of variable effective area, pressure responsive movable diaphragm means, and actuator means operatively connected to and movable with said diaphragm means and effective to at least at times operatively engage said power valving member in order to thereby move said power valving member in a direction as to open said flow orifice means, said diaphragm means being exposed to a source of engine vacuum as to thereby be urged in a first direction, adjustable spring means normally urging said diaphragm means in a second direction opposite to said first direction, said actuator means being effective to move said power valving member in said direction to open said flow orifice means when said diaphragm means and said actuator means move in said second direction, and wherein said first direction and second direction define a path of movement other than parallel to the path of movement by said power valving member when said power valving member moves in said direction to open said flow orifice means, said carburetor means comprising fuel reservoir means, said fuel reservoir means comprising a lower disposed generally laterally extending wall portion and an upwardly extending wall portion, said pressure responsive diaphragm and actuator means and said power valve body and valving member are carried entirely by said wall portions.



4,225,537

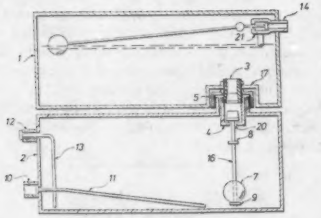
CARBONATING DEVICE

Stephen Martonffy, 310 E. 55th St., New York, N.Y. 10022

Filed Jun. 3, 1976, Ser. No. 692,465

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—70 **4 Claims**



1. An apparatus for carbonating liquid such as water or other beverage comprising:

a carbonating tank having

a liquid inlet port for introducing liquid to be carbonated,

a liquid outlet port for dispensing carbonated liquid, and

a gas inlet port for introducing pressurized carbon dioxide gas into said carbonating tank;

a reservoir tank disposed above said carbonating tank for storing the liquid to be carbonated, said reservoir tank having a liquid outlet port;

a conduit connecting said outlet port of said reservoir tank with said liquid inlet port of said carbonating tank; and

valve means responsive to the level of the liquid in said carbonating tank for opening said conduit to permit liquid stored in said reservoir tank to flow into said carbonating tank under the influence of gravity until said carbonating tank becomes substantially filled, for closing said conduit thereupon, and for maintaining said conduit closed thereafter to prevent the flow of liquid from said reservoir tank into said carbonating tank until said carbonating tank is substantially empty of liquid and the pressure of the gas therein is less than the pressure of the liquid at said outlet port of said reservoir tank.

4,225,538

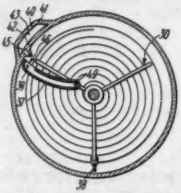
ROTOR FILM MASS AND HEAT EXCHANGER

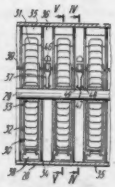
Alexandr V. Shafranovsky, ulitsa Molodezhnaya, 4, kv. 7, Balashikha Moskovskoi oblasti; Viktor M. Olevsky, Leningradsky prospekt, 75a, kv. 91, Moscow; Vladimir K. Chubukov, Komsomolsky prospekt,, Moscow, and Jury A. Baskov, shosse Entuziastov, 156, kv. 20, Moscow, all of U.S.S.R.

Continuation of Ser. No. 757,295, Jan. 6, 1977, abandoned. This application Aug. 30, 1978, Ser. No. 938,040

Int. Cl.² B01D *47/18*

U.S. Cl. 261—92 **1 Claim**





1. A rotor film mass exchanger comprising: a casing of a circular cross section arranged substantially horizontally and having liquid and gas inlet and outlet pipe connections; a shaft installed rotatably in said casing coaxially with the latter; reflux stages secured to said shaft; bands forming said reflux stages, bent in the form of spirals diverging from said shaft and flanged toward the latter; refluxing devices for moving the liquid from one of said reflux stages to another; a spray collector for each of said refluxing devices formed as a circular trough secured to the inner surface of the casing, embracing the reflux stage, said collector being adapted to receive the liquid thrown off from said reflux stage; at least one partition for each of said refluxing devices, said partition being connected with the periphery of the reflux stage, and across it; a wall means defining a longitudinal chamber for said refluxing devices, a side wall connected to said wall means, the chamber adjoining the bottom of said circular trough on the outside being disposed higher than the casing axis and provided at the top with an inlet hole for communication with the inner space

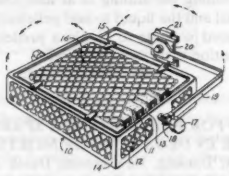
of the circular trough; and an outlet hole in the lower part, said inlet hole of the chamber being larger than its outlet hole; an overflow pipe in each of said refluxing devices; said inlet end of said overflow pipe communicating with said outlet hole of the chamber; and the outlet end of said overflow pipe being at the reflux stage to which the liquid is to be delivered.

4,225,539

ROOM HUMIDIFIER AND THE HUMIDIFICATION SYSTEM

Paul R. Grants, 17D, Cardinal St., Lakehurst, Ocean County, N.J. 08733

Filed Oct. 4, 1978, Ser. No. 948,529
Int. Cl.[2] B01F *3/04*
U.S. Cl. 261—99 **8 Claims**



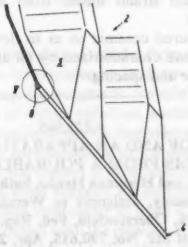
1. In combination with a room having interior boundary surfaces and subject to occasional varying natural paths of air circulation therein, a plurality of support structures supported upon selected portions of said boundary surfaces, a plurality of mesh-type housings, said housings and said support structures including coating portions supporting said housings from said support structures for manual angular displacement of said housing relative to said support structures, a plurality of elongated tubular water absorbent evaporator elements open at their opposite ends and supported within each of said housings in spaced apart relation therewithin for effecting air flow thereover in an efficient manner to evaporate water from said elements when said housings are optimumly positioned in space portions of the natural path of air circulation in said room.

4,225,540

PACKING FOR HEAT AND MATERIAL EXCHANGE, PARTICULARLY FOR COOLING TOWERS

Michael Kauschke, Aachen, Fed. Rep. of Germany, assignor to Carl Munters-EUROFORM, Aachen, Fed. Rep. of Germany

Filed Apr. 10, 1979, Ser. No. 28,826
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—112 **7 Claims**



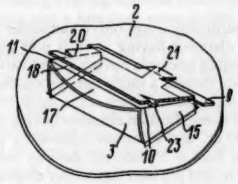
1. A packing for heat and material exchange in cooling towers, comprising a plurality of layers of a corrugated foil, said layers being positioned with the corrugations of adjacent layers crossing and supporting one another, said layers each having upper and lower longitudinally extending edges at least one of which is formed as a continuous straight longitudinal edge, said corrugations of each layer having a transition area wherein they taper from their maximum height into said straight longitudinal edge.

4,225,541

CONTACT TRAY FOR MASS AND HEAT EXCHANGE APPARATUS

Valery I. Vaschuk, 9 ulitsa Sokolinoi gory, 19, kv. 73; Gennady V. Starikov, ulitsa Zaraiskaya, 25, korpus 1, kv. 33, both of Moscow; Gennady P. Solomakha, ulitsa Pervomaiskaya, 56, kv. 25, Dolgoprudny Moskovskoi oblasti; Oleg S. Chekhov, ulitsa Shvernika, 11, korpus, 2, kv. 3, Moscow; Nikolai G. Shmuilov, ulitsa Bagritskogo, 22, kv. 163, Moscow; Iosif D. Beilinson, ulitsa Lesnaya, 13, kv. 9, Moscow, and Boris S. Zats, ulitsa Titova, 6, Penza, all of U.S.S.R.

Filed Dec. 20, 1977, Ser. No. 864,143
Int. Cl.[2] B01D *3/22*
U.S. Cl. 261—114 VT **3 Claims**



1. A contact tray for mass and heat exchange apparatus comprising:

a planar base adapted to be rigidly secured in a vertically extending column, a plurality of apertures being formed in said base; and

a plurality of valves, each of which is located in a respective one of said apertures, each of said valves comprising a member formed of sheet material having the initial configuration of a circular sector with a truncated apex, said member being defined by a body portion, a pair of peripheral side portions and an outer segment portion having an arcuate edge region extending between said peripheral side portions each of said peripheral side portions being bent towards said base along a respective radius of said member with respect to said body portion to form opposed valve side walls integral with and extending inwardly towards said base from said valve member body portion and so that the upper wall of the valve is shaped substantially as an isosceles trapezoid whose larger parallel side is directed towards the direction of outlet of gas from the valve, and said outer segment portion being bent with respect to said body portion to extend inwardly towards said base from said valve member body portion to form a limiter portion of said valve for limiting the movement thereof to its closed or lower position by way of contact of a point on the arcuate edge region thereof with said base, said body portion forming the upper wall of the valve and an upper position limiter portion for limiting the movement of the valve to its open or upper position, said upper position limiter portion constituting a plate punched from said base to form the aperture in which a respective valve is located, said plate extending upwardly at an acute angle to said base from one edge thereof which is integrally connected to said base.

4,225,542

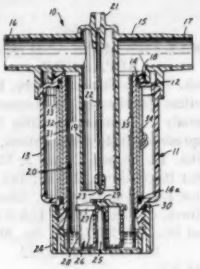
EVAPORATIVE HUMIDIFIER

Thomas H. Wall, St. Paul, and Kevin T. Johnson, Minneapolis, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 817,799, Jul. 21, 1977, abandoned. This application Dec. 12, 1978, Ser. No. 968,829

Int. Cl.[2] B01F *3/04*; A61M *15/00*

U.S. Cl. 261—142 **5 Claims**



1. A sterilizable evaporative humidifier comprising a humidification chamber having an inlet port and an outlet port for gases, a liquid reservoir having a float valve for controlling the liquid level therein, a single-use, disposable porous evaporative element and a heating element isolated from said liquid reservoir, said humidification chamber having an internal volume of about 200 cc. and being surrounded by said heating element such that heat is transferred directly from the wall of said chamber to said porous evaporative element, said porous evaporative element being an open-ended cylinder having a vertical wicking rate of about two inches in the first minute and fitting loosely within said humidification chamber when dry and swelling into intimate contact with the side wall thereof when wet, one end of said evaporative element extending into said liquid reservoir to wick said liquid into the entire body of said evaporative element, said heating element being electronically controlled to provide respiratory gases to the patient at 100 percent relative humidity at a temperature of about 25° to 40° C. within two minutes of start-up, at a continuous flow rate of from about 1 to about 60 liters per minute and a peak inspiratory flow rate of about 10 to about 100 liters per minute, the pressure drop in said humidifier being about 0.1 cm. of water at a continuous flow rate of 30 liters per minute, with flow path of gases into and through said chamber being from said inlet port, along the interior surface of said porous evaporative element and thence through said outlet port, said humidifier being readily disassembled into its component parts for sterilization.

4,225,543

METHOD FOR DETERMINING THE PELLET SIZE DISTRIBUTION OF A PELLETIZER AND FOR CONTROLLING THE OUTPUT OF SUCH PELLETIZER

Charles M. Hohman, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 9, 1978, Ser. No. 932,244

Int. Cl.[2] B01J *2/12*

U.S. Cl. 264—40.4 **15 Claims**

1. A method for controlling the size distribution of pellets produced by a pelletizer comprising the steps of:

(a) adding particulate material to a pelletizer;

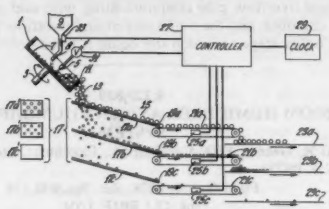
(b) adding liquid to the pelletizer;

(c) operating said pelletizer to produce pellets;

(d) separating such produced pellets into at least two groups of separate and distinct pellet sizes;

(e) weighing the separated groups;

(f) comparing a ratio of the weights of said groups to a predetermined standard to determine the pellet size distribution produced by said pelletizer; and



(g) controlling the adding of at least one of the particulate material and the liquid to said pelletizer in response to said compared weights to obtain a predetermined pellet size distribution from said pelletizer.

4,225,544

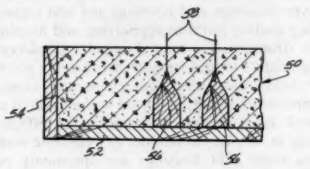
METHOD FOR FABRICATING A SPARGER PLATE FOR USE IN DEGASSING OF MOLTEN METAL

Jonathan A. Dantzig, New Haven; Derek E. Tyler, Cheshire, and Richard C. Milici, Madison, all of Conn., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Division of Ser. No. 874,867, Feb. 3, 1978, Pat. No. 4,166,604. This application Apr. 25, 1979, Ser. No. 33,792

Int. Cl.[3] B29H *7/20*; C04B *35/64*

U.S. Cl. 264—43 **3 Claims**



1. An improved method for manufacturing a sparger plate for use in the degassing of molten metal, comprising:

providing a mold means consisting of at least a base means and side wall means;

securing to said base means an array of strand receiving cores of controlled spacing for receiving strand means in a plane vertical to said base means;

locating said strand means of controlled size in said strand receiving cores;

pouring a castable ceramic into said mold means;

allowing said castable ceramic to cure;

removing said strand means from said strand receiving cores; and

firing said cured ceramic so as to develop a cast ceramic sparger plate characterized by an array of holes of controlled size and spacing.

4,225,545

METHOD OF AND AN APPARATUS FOR MAKING PREFORMS FROM A POURABLE SUBSTANCE

Edmund Munk, and Hermann Henke, both of Oberstenfeld, Fed. Rep. of Germany, assignors to Werzalit J F Werz Jr Kg Pressholzwerk, Oberstenfeld, Fed. Rep. of Germany

Continuation of Ser. No. 790,615, Apr. 25, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,540

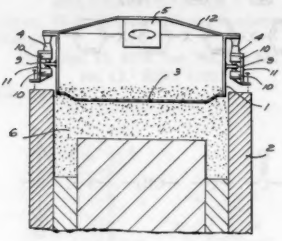
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2709467; Apr. 28, 1976, 2618599; May 15, 1976, 2621717

Int. Cl.[2] B29J *5/02*

U.S. Cl. 264—72 **8 Claims**

1. A method of making preforms from pourable but at most

limitedly flowable substances, such as a mixture of chip-shaped or filamentary material with a binder, for subsequent use in producing three-dimensional articles, comprising the steps of defining a substantially closed forming space of a configuration substantially corresponding to that of a preform to be made



between a perforated bottom element of a container element and a stationary three-dimensional mold; feeding said substance into said container element; and distributing the substance throughout the forming space by only vibrating at least one of said elements relative to said stationary mold.

4,225,546

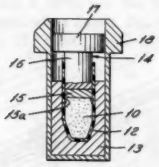
METHOD OF COMPACTING DRY POWDER INTO SHAPES

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Detroit, Mich.

Continuation of Ser. No. 713,569, Aug. 11, 1976, abandoned, which is a continuation of Ser. No. 337,581, Mar. 2, 1973. This application Jul. 14, 1977, Ser. No. 815,873

Int. Cl.[2] C22B *1/16*

U.S. Cl. 264—114 **6 Claims**



1. A method of making shaped articles from sinterable powder which comprises (a) introducing said powder into a cup mold composed of organic polymeric material selected from the group consisting of nylon, cellulose, acetate, polymethylmethacrylate, polypropylene, and polyethylene, with an inner surface configuration corresponding to the outer surface configuration desired in the shaped article, said cup mold being supported by a metal mold support, (b) positioning a metallic plunger, having a shank contoured to have a snug fit in said mold, so as to make contact with the powder, (c) subjecting the powder mold, mold support, and plunger to centrifugal force to compress the powder against the inner wall of said mold, (d) removing said polymeric mold with shaped compressed powder from said mold support, (e) heating said mold and compressed powder to vaporize said mold and (f) further heating to sinter said shaped compressed powder.

4,225,547

EXTRUSION PROCESS OF POLYTETRAFLUOROETHYLENE TUBING MATERIALS AND APPARATUS THEREFOR

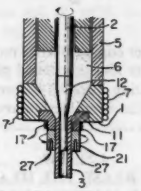
Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 750,318, Dec. 14, 1976, abandoned. This application Sep. 22, 1978, Ser. No. 944,682

Claims priority, application Japan, Dec. 15, 1975, 50-149718; Sep. 22, 1976, 51-114006

Int. Cl.[2] B29F *3/08*

U.S. Cl. 264—127 **11 Claims**



1. A method of extruding a tubing material from a mixture of polytetrafluoroethylene and a lubricant using a ram type extruding apparatus having a smooth central mandrel having a constant diameter approximately equal to the inside diameter of the extruded tubing material and a die connected to a cylinder along and within which a ram is slidable to force the mixture into the die, comprising the steps of employing said die having a die insert terminating into a die-land, with the opening diameter of said die-land being smaller than the opening diameter of said die insert terminating into said die-land, rotating at least an end portion of the die in one direction during the extrusion of the mixture into a tubing material and thermally expanding said tubing material in the die by heating at least a portion of the die to a temperature higher than the temperature of the mixture in the cylinder, whereby fibrous-state formation in the direction perpendicular to the extrusion direction is accelerated.

9. A method of extruding a tubing material from a mixture of polytetrafluoroethylene and a lubricant using a ram type extruding apparatus having a smooth central mandrel and a die connected to a cylinder along and within which the ram is slidable to force the mixture into the die, comprising the steps of employing said die having a die insert terminating into a die-land, rotating at least the smooth central mandrel in one direction during the extrusion of the mixture into a tubing material and thermally expanding said tubing material in the die by heating at least a portion of the die to a temperature higher than the temperature of the mixture in the cylinder, whereby fibrous-state formation in the direction perpendicular to the extrusion direction is accelerated.

4,225,548

METHOD FOR PRODUCING DRAWING STENCILS

Edgar Wassmann, Hamburg, Fed. Rep. of Germany, assignor to Mesne Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Oct. 11, 1978, Ser. No. 950,643

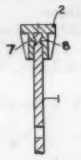
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1977, 2746741

Int. Cl.[3] B29C *6/04*

U.S. Cl. 264—130 **4 Claims**

1. In a process for producing writing and drawing stencils of the type wherein a stencil plate is comprised of a plastic material and there is a border edge bound upon at least on edge of said plate, the improvement which comprises forming said border edging by injection molding a plastic material onto said at least one edge of a stencil plate which has been pre-formed, and placed in a precisely defined position, with respect to an injection mold, wherein said injection molding step is accom-

plished by means of positioning elements preformed within said stencil plate, wherein further the template sheet is provided with slots running lengthwise along the border areas



upon which said border edging is to be molded, and characterized further by the fact that the stencil plate border areas are coated with a lubricating material before a border edging of the same plastic material is molded thereon.

4,225,549

METHOD TO INCREASE THE HEAT DEFLECTION TEMPERATURE OF AMORPHOUS POLYETHYLENE TEREPHTHALATE

David R. Allan, Atlanta, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Jul. 18, 1979, Ser. No. 58,749
Int. Cl.[2] B29C *25/00*
U.S. Cl. 264—234 **9 Claims**

1. Method to increase the heat deflection temperature of amorphous polyethylene terephthalate by removing water therefrom.

4,225,550

PROCESS FOR MOLDING ACETYLENE END-CAPPED POLYIMIDE OLIGOMERS

Khalid A. Karim, and James H. Rea, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Nov. 24, 1978, Ser. No. 963,615
Int. Cl.[3] B29C *25/00*
U.S. Cl. 264—236 **4 Claims**

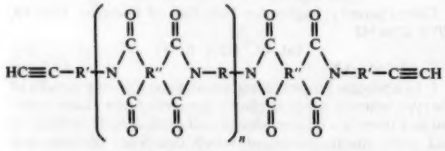
1. In a process for preparing a thermoset molding of an acetylene end-capped polyimide oligomer; the improvement which consists essentially of:

a. Filling a mold with acetylene end-capped polyimide oligomer particles of a size such that at least 50 weight % of said particles will pass through a 28-mesh screen (U.S. Standard),

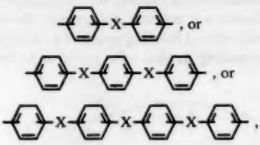
b. Subjecting the particles to a pressure of at least about 50,000 psi at ambient temperature to prepare a preformed molding having a density of at least about 1.23 gms/ml, and

c. Removing the preformed molding from the mold and heating it to a temperature below the melting point of said oligomer for a period of time sufficient to cross link the molding;

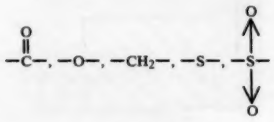
where the acetylene end-capped polyimide oligomer has the structure:



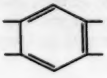
where n has an average value of from 1 to about 10, where each of R and R′ is independently selected from the group consisting of a phenylene group, a naphthalene group, or



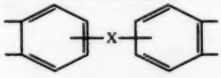
where X is



—CF_2—, or a bond, and where R″ has the structure:



or



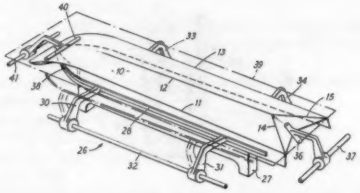
and where X is as defined above.

4,225,551

BOAT HULLS

Robert Gault, 12 Ranmoor Cliffe Rd., Sheffield S10 3HB, England

Filed May 18, 1978, Ser. No. 907,199
Int. Cl.[2] B29C *24/00*
U.S. Cl. 264—238 **9 Claims**



1. A method of preparing a blank from which the hull of a collapsible boat can be fabricated, including the steps of providing a substantial planar, solid rectangular sheet of thermoplastic polyolefin material of a thickness not less than one millimeter and not more than four millimeters, heating the sheet on one face thereof along a predetermined pattern of lines to a temperature at which the material is softened along the said lines, providing a jig upon which to fold the sheet along the said lines, placing the sheet in the jig with the material of the sheet still soft along the said lines, folding the sheet in the jig along the softened lines in the direction of the heated face, and retaining the sheet in the jig in its folded state until the material along the said lines is cool and stiffens to form a fold tending when flattened to resume its folded position, the pattern of lines being such that the sheet in its folded state has

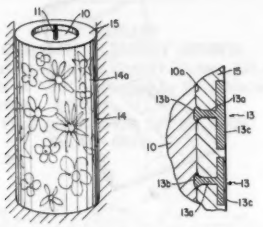
the shape of the hull of a boat, and whereby said folded sheet is capable of being flattened for expediting storage and movement when not in use.

4,225,552

DECORATIVE CANDLE

Se Won Chang, 19-2, Yorkchun-Dong, Seodaemungu, Seoul, Rep. of Korea

Filed Jan. 23, 1978, Ser. No. 871,434
Int. Cl.[2] B29C *9/00*
U.S. Cl. 264—247 **2 Claims**



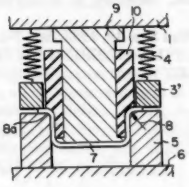
1. A method of manufacturing a decorative candle comprising the steps of forming a central cylindrical core of a wax composition material having one melting temperature, causing a plurality of decorative wax elements of essentially the same wax composition and melting temperature to be fused by heat to the surface of said core and to project therefrom generally equidistantly, pouring an outer shell of a second wax composition having a slightly higher melting temperature about said core to encase said decorative elements such that said decorative elements extend essentially for the entire width of said outer core.

4,225,553

METHOD OF MANUFACTURING LOW-RIGID, WRINKLE-FREE ARTICLES

Kazumi Hirota, Tokyo, and Kikuo Matsuoka, Fujisawa, both of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Filed Jul. 3, 1978, Ser. No. 921,162
Claims priority, application Japan, Jul. 5, 1977, 52-79532
Int. Cl.[2] B29C *17/02, 25/00*
U.S. Cl. 264—292 **11 Claims**



1. A method of manufacturing a formed article comprising the steps of

bringing a thin sheet having a relatively low rigidly on a die having a radiused corner and a cavity with one surface of the sheet in contact with the radiused corner,

drawing the thin sheet having relatively low rigidity into the cavity of the die substantially without stretching the sheet and without changing the thickness of the sheets by means of a punch until a formed article is formed, by the step of drawing said thin sheet over the radiused corner of the die while depressing an opposite surface portion of said thin sheet, which opposite surface portion is opposite to a portion of said one surface of said thin sheet that is in contact with the radiused corner, substantially throughout the entire drawing operation until formation of the formed article, thereby preventing creation of wrinkles on said formed article.

4,225,554

THERMOSETTING MOLDING RESIN COMPOSITIONS

Neil Kaplan, Brooklyn, N.Y., assignor to Hi-Tech Industries, Inc., Jamaica, N.Y.

Division of Ser. No. 697,307, Jun. 18, 1976, Pat. No. 4,129,543. This application Jul. 26, 1978, Ser. No. 928,307
Int. Cl.[2] B28B *1/24*
U.S. Cl. 264—328.2 **6 Claims**

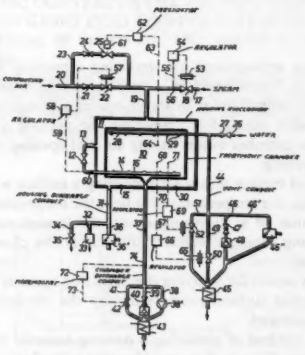
1. In a method for injection molding of a thermosettable polyester resin composition, the resin composition comprising an unsaturated polyester resin capable of cross-linking with a vinyl monomer to form a thermoset polymer and a vinyl monomer capable of cross-linking with said polyester resin to form the thermoset polymer, the process comprising injecting under advanced pressure and temperature the thermosettable composition into a mold and removing the molded thermoset polymer from the mold, the improvement comprising the addition of a dimethyl polysiloxane to the thermosettable resin composition prior to injecting, whereby dispersed noncondensible gases are removed prior to injection molding without substantial loss of any volatile monomer.

4,225,555

METHOD FOR STERILIZING ARTICLES IN AN AUTOCLAVE

Hans A. Fahlvik, Sloinge, and Kurt E. Sandquist, Getinge, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Division of Ser. No. 762,345, Jan. 25, 1977, Pat. No. 4,157,384. This application Aug. 11, 1978, Ser. No. 933,113
Claims priority, application Sweden, Jan. 26, 1976, 7600740
Int. Cl.[2] A61L *1/00*
U.S. Cl. 422—25 **2 Claims**



1. A method of sterilizing objects in an autoclave having a chamber and a conduit for supply of steam, a conduit for supply of air and at least one discharge conduit and one vent conduit, comprising the steps of: heating said objects in said chamber, causing steam to flow through said chamber in quantities controlled by a first regulating valve, said second regulating valve being operated by means controlled by the temperature present in said steam conduit, and causing air to flow through said chamber in quantities controlled by second and third regulating valves in parallel branches of said air conduit, said second regulating valve being operated by means con-

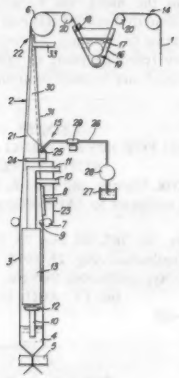
trolled by the pressure prevalent in said chamber, and said third regulating valve being operated by means controlled by the temperature prevalent in said chamber.

4,225,556

METHOD AND APPARATUS FOR THE STERILIZING OF A PACKING MATERIAL WEB

Stig A. Löthman, Södra Sandby, and Alfred Fuchs, Lund, both of Sweden, assignors to Tetra Pak International AB, Lund, Sweden

Filed Oct. 4, 1977, Ser. No. 839,274
Claims priority, application Sweden, Oct. 7, 1976, 7611124
Int. Cl.[2] A61L *1/00, 3/00;* **B65B** *55/10*
U.S. Cl. 422—28 **11 Claims**



1. An arrangement for sterilizing a packing material web which is transformed in a packing machine into individual package units filled with sterile contents, comprising:

chamber means for conducting the packing material web, the chamber means having an inlet opening and an outlet opening;

heated surface means for providing a surface which is heatable to a temperature of at least the temperature of evaporation of a sterilizing agent, the heated surface means being arranged substantially within the chamber means; and,

spray means for spraying the sterilizing agent as a mist to the heated surface means whereby the sterilizing agent is vaporized.

7. A method of sterilizing a packing material web which is transformed in a packing machine into individual package units filled with sterile contents, comprising the steps of:

conducting a packing material web through a chamber having an inlet opening and an outlet opening;

heating a surface which is arranged substantially within the chamber receiving the web to a temperature sufficient to vaporize a sterilizing agent;

spraying the sterilizing agent as a mist onto the heated surface;

vaporizing the sterilizing agent on the heated surface; and,

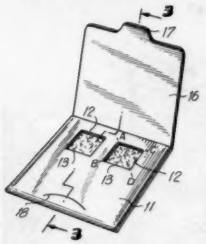
condensing the vaporized sterilizing agent on at least one side of the web.

4,225,557

PACKAGED DIAGNOSTIC TEST STRIP

Roland Hartl, Eppertshausen; Dieter Helm, Heppenheim, and Dieter Kraemer, Mainz, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,263
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 7720665[U]
Int. Cl.[2] G01N *33/16*
U.S. Cl. 422—56 **3 Claims**



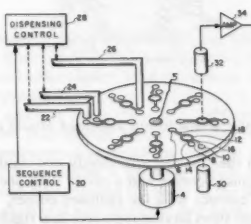
1. A packaged diagnostic test strip for determining occult blood in a stool sample, said test strip comprising a first or front sheet having at least one aperture therein, said aperture having at least one included angle equal to or less than 90 degrees; a diagnostic test strip under said front sheet and extending under said aperture, said test strip containing a reagent, developable by the separate application of peroxide solution thereto, for the detection of occult blood in a stool sample to be applied to said diagnostic test strip through said aperture; a back sheet supporting said test strip in layered arrangement with said test strip and with said front sheet, said back sheet having at least one flap-covered aperture therein in that region thereof corresponding to the location of said aperture in said front sheet, whereby when the flap is opened said test strip is exposed thereunder for application of peroxide solution thereto to develop the reagent present in said test strip; and a closure flap at least partially extending over said front sheet and having closure means thereon for covering said aperture in said front sheet when in closed position.

4,225,558

FLUID SAMPLE TEST APPARATUS AND FLUID SAMPLE CELL FOR USE THEREIN

Dean M. Peterson, Littleton, and Joseph R. Skovrinski, Denver, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 19, 1978, Ser. No. 943,705
Int. Cl.[2] G01N *1/10, 21/24*
U.S. Cl. 422—72 **8 Claims**



1. A fluid test cell comprising

a fluid impervious support tray,

a plurality of fluid storage recesses located at each of a plurality of spaced peripheral locations on said tray,

each of said fluid storage recesses at each location being either in a radially inward or a radially outward position with respect to a center of said tray and

fluid conducting channels at each location connecting predetermined ones of said recesses,

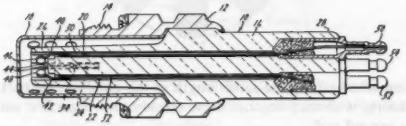
wherein said recesses at each location are at least three in number and are located on a common radial line of said tray and said channels at each location are located along said radial line, and including a fourth fluid sump recess at each location and a fluid conducting channel adjacent to said common radial line connecting said fourth recess to a center one of said three recesses on said radial line.

4,225,559

CERAMIC ELEMENT SENSOR

Achyuta Achari, Detroit, and Elmer T. Heiney, III, Huntington Woods, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 22, 1979, Ser. No. 5,425
Int. Cl.³ G01N *27/12*
U.S. Cl. 422—98 **5 Claims**



1. An improved sensor of the type having a ceramic element that undergoes a change in an electrical characteristic of the ceramic element in response to a change in the partial pressure of oxygen in a mixture of gases to which the ceramic element is exposed, the ceramic element having electrodes connected thereto in spaced apart relationship and extending from the ceramic element to permit the resistance between them to be sensed, the ceramic element being porous to permit oxygen in the gases to which the ceramic element is exposed to migrate into and out of its interior regions, and the ceramic element having a discontinuous or porous charge transfer material deposited thereon, wherein the improvement comprises: a majority of the charge transfer material by weight is Pt and wherein Rh is included in an amount sufficient to allow the charge transfer material to be retained on the ceramic element when the ceramic element is exposed to gaseous mixtures produced by lean-mixture combustion at ceramic element temperatures in excess of about 850° C.

4,225,560

NUCLEAR FUEL REPROCESSING APPARATUS

Takenori Nakanishi; Yuji Yoshikawa, both of Tokyo, and Takao Tagaeto, Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1977, Ser. No. 816,736
Claims priority, application Japan, Apr. 1, 1977, 52-37908
Int. Cl.² G21C *19/48, 19/44*
U.S. Cl. 422—159 **2 Claims**

1. Apparatus for reprocessing nuclear fuels and the sheaths thereof, comprising

(a) a fixed generally horizontal unitary closed furnace shell member (F) containing a chamber and including

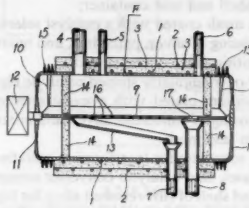
(1) a pair of generally vertical diaphragms comprising integral end walls (11) arranged at opposite ends of said shell member;

(2) a nuclear fuel supply port (4), an oxygen supply port (5) and an exhaust gas discharge port (6) extending generally vertically upwardly from the upper portion of said chamber; and

(3) first and second discharge ports (7,8) extending generally vertically downwardly from the lower portion of said chamber;

(b) a generally planar oxidation and separation plate (9) centrally arranged within said chamber and connected with said shell end walls, said plate being slightly inclined from the horizontal axis of said shell and including a plurality of holes (16) having a first small diameter and a single hole (17) having a second large diameter, said single hole being arranged directly above said second discharge port;

(c) vibrator means (12) arranged on the exterior of said shell and extending through one of said pair of end wall dia-



phragms for connection with one end of said plate for vibrating said plate and said end wall diaphragms relative to said fixed shell member; and

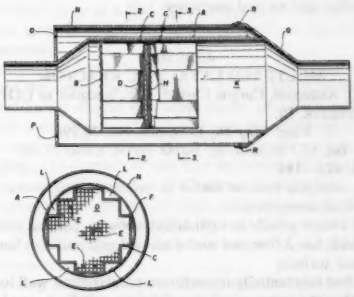
(d) inclined guide means (13) connected with said first discharge port and arranged beneath plurality of holes in said plate, whereby said vibrator means vibrates said plate and said end wall diaphragms to agitate said fuel during the reprocessing thereof, small particulates of reprocessed fuel thereby passing through plurality of small holes in said plate to said first discharge port via said guide means, and said larger particulates of reprocessed fuel and said fuel sheaths thereby passing through said large hole in said plate to said second discharge port.

4,225,561

CATALYTIC CONVERTER FOR TRANSFORMING POLLUTING GASES INTO NON-POLLUTING GASES

Silvestre S. Torres, 30 Poiente No. 1512, Interior 2, Puebla, Pue., Mexico

Continuation-in-part of Ser. No. 699,560, Jun. 24, 1976, abandoned. This application May 16, 1978, Ser. No. 906,390
Claims priority, application Mexico, Jun. 24, 1975, 159191
Int. Cl.² B01J *35/04, 8/02*; F01N *3/15*
U.S. Cl. 422—171 **10 Claims**



1. A catalytic converter for transforming polluting gases into non-polluting gases, said catalytic converter comprising:

(a) an elongated shell of rust-resistant alloy for high temperatures having an open inlet end to admit polluting gas into

the shell and an open outlet end to permit flow out of the shell;

(b) a transverse partition member comprising a metallic grill coated with a catalyst selected from the group consisting of silver, palladium, and mixtures thereof within said elongated shell, proximate to and spaced from the open inlet end of said elongated shell;

(c) a container having an open inlet end and an open outlet end, the inlet end of said container being fixedly attached to the downstream transverse surface of said partition member at least part of the outer surface of said container being spaced from the interior surface of said elongated shell, thereby forming a gas passageway between said elongated shell and said container;

(d) a metallic mesh coated with a catalyst selected from the group consisting of silver, palladium, and mixtures thereof confined within said container; and

(e) a plurality of triangularly shaped catalytic elements comprised of iridium plated with a metal selected from the group consisting of palladium, silver, and mixtures thereof contained in said mesh.

5. A catalytic converter for transforming polluting gases into non-polluting gases, said catalytic converter comprising:

(a) an elongated shell of rust-resistant alloy for high temperatures having an open inlet end to admit polluting gas into the shell and an open outlet end to permit flow out of the shell;

(b) a transverse partition member comprising a metallic grill coated with a catalyst selected from the group consisting of silver, palladium, and mixtures thereof within said elongated shell, proximate to and spaced from the open inlet end of said elongated shell;

(c) a first container having an open inlet end and an open outlet end, the inlet end of said first container being fixedly attached to the downstream transverse surface of said partition member, at least part of the outer surface of said first container being spaced from the interior surface of said elongated shell, thereby forming a first gas passageway between said elongated shell and said first container;

(d) a first metallic mesh coated with a catalyst selected from the group consisting of silver, palladium, and mixtures thereof confined within said first container;

(e) a second container having an open inlet end and an open outlet end, the inlet end of said second container being removably attached to the outlet end of said first container, at least part of the outer surface of said second container being spaced from the interior surface of said elongated shell, thereby forming a second passageway contiguous with said first gas passageway, the open outlet end of said second container being spaced from the open outlet end of said elongated shell; and

(f) a second metallic mesh coated with chromium confined within said second container.

4,225,562

MULTI-BED CATALYTIC REACTOR

Mark C. Anderson, Corpus Christi, Tex., assignor to UOP Inc., Des Plaines, Ill.

Filed May 14, 1979, Ser. No. 38,990

Int. Cl.[3] **B01J** *8/02;* **B01D** *53/04;* **C10G** *51/06*

U.S. Cl. 422—188 **9 Claims**

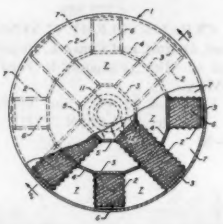
1. A catalytic reactor useful in processing vaporous reactants which comprises:

(a) a vessel which is cylindrical about a central axis and which has a first end and a second end and a cylindrical inner surface;

(b) a first substantially imperforate tubular-form wall located within the outer vessel at a distance radially inward from the inner surface of the vessel and which is concentric about the central axis of the vessel;

(c) a second substantially imperforate tubular-form wall located within the vessel at a distance radially inward from the first tubular-form wall and which is concentric about the central axis of the vessel;

(d) a plurality of elongated catalyst compartments located in the volume located between the first and the second tubular-form walls, with each catalyst compartment being oriented with the central axis of the vessel and having two opposing sides formed by a pair of parallel planar perforate panels which extend from the first to the second tubular-form walls, with each catalyst compartment having sealed first and second ends, and with the opposing perforate panels of adjacent catalyst compartments being spaced apart to provide reactant flow chambers located between the first and the second tubular-form walls having substantially the same length as the catalyst compartments, with each reactant flow chamber having a first and a second end;



(e) a bed of particulate catalyst within each of the catalyst compartments;

(f) seal plates closing the first end of the alternating reactant flow chambers;

(g) seal plates closing the second end of each reactant flow chamber which does not have a seal plate on the first end;

(h) inlet means for passing reactants into alternating reactant flow chambers; and,

(i) outlet means for removing reactants from reactant flow chambers which are not in communication with said inlet means.

4,225,563

PROCESS AND APPARATUS FOR CONTINUOUS LEACHING OF ORES

Shoichi Hasegawa, Tokyo; Thoru Yamashita, Yokohama, and Mitsuo Kameda, Tokyo, all of Japan, assignors to International Resources Company, Ltd., Japan

Filed Aug. 21, 1978, Ser. No. 935,501

Claims priority, application Japan, Sep. 9, 1977, 52-108488

Int. Cl.[2] **C01G** *43/00, 3/00, 31/00, 53/00*

U.S. Cl. 423—20 **12 Claims**

1. A process for the continuous leaching of ores for continuously leaching out and extracting metal components contained in the ore, which comprises:

(A)

(1) continuously forming a plurality of layers of pulverized ore,

(2) continuously moving each of said layers in sequence through a sprinkling zone, a laminating zone and a self-sustaining thermal curing zone,

(3) continuously and uniformly sprinkling a metal component extracting solvent selected from the group consisting of an acid, an alkali solvent and an organic solvent on the surface of each of said layers as the layers move through said sprinkling zone, said layers being of sufficient thickness to form in each unit layer a uniform mixture of the pulverized ore and solvent,

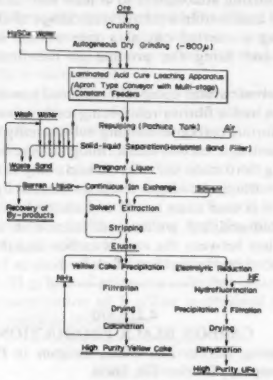
(4) continuously laminating the so-sprinkled unit layers in said laminating zone, and

(5) allowing the ore in said laminated layers to become thermally cured utilizing the exothermic heat generated

in situ as the laminated layers move through said thermal curing zone; and

(B)

(1) repulping thermally cured laminated layers recovered from said thermal curing zone, and



(2) subjecting the repulped material to solid-liquid separation to recover a pregnant liquor containing the extracted metal component.

4,225,564

PURIFICATION OF RUTILE

William K. Tolley, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 22, 1979, Ser. No. 13,932
Int. Cl.[2] C01G *23/04*
U.S. Cl. 423—81 **5 Claims**

1. A process for the removal of chloride-containing compounds from rutile obtained by precipitation with ferric oxide from a hydrogen chloride solution which process comprises slurrying with said rutile a solution of (1.) hydrogen peroxide in an amount in the range of from about 0.5 to about 2.0% based on the weight of said rutile and (2.) an inorganic acid at a temperature in the range of from about 25° C. to about 100° C. to complex said chloride-containing compounds, and recovering rutile relatively free of said chloride-containing compounds.

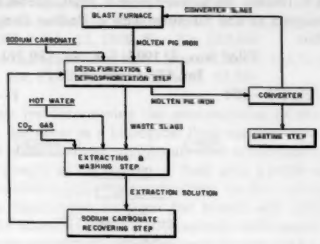
4,225,565

PROCESS FOR TREATING WASTE SLAGS

Katsukiyo Marukawa; Setsuo Okamoto, both of Ibaragi; Kazunari Yamada, and Masahisa Iba, both of Tokuyama, all of Japan, assignors to Tokuyama Soda Company Limited, Tokuyama and Sumitomo Metal Industries Limited, Osaka, both of, Japan

Filed Jan. 25, 1979, Ser. No. 6,293
Claims priority, application Japan, Jan. 26, 1978, 53-7707; Dec. 27, 1978, 53-160117
Int. Cl.[2] C01D *7/00*
U.S. Cl. 423—208 **17 Claims**

1. A process for treating waste slags produced in the desulfurisation and/or dephosphorisation of molten pig iron with alkali carbonates, which comprises treating said waste slag with hot water while feeding carbon dioxide gas to form an



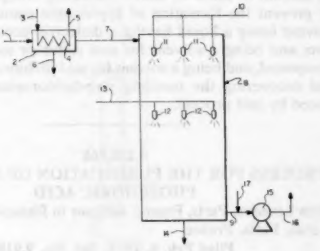
extraction solution of alkali carbonate having a pH of 9.0–11.5 and recovering alkali carbonates from said extraction solution.

4,225,566

PROCESS FOR PERFORMING MULTIPLE CHEMICAL REACTIONS

Egbert deVries, Kettering, Ohio, assignor to Quad Corporation, Highland Park, Ill.

Filed May 10, 1978, Ser. No. 904,647
Int. Cl.[3] B01D *53/34*
U.S. Cl. 423—210 **13 Claims**



1. A method for simultaneously reacting multiple components of a gas stream with two or more liquid reagents which comprises:

passing said gas stream into an upper level of a reaction zone;

introducing into the upper level of said reaction zone a finely divided spray of a first liquid reagent, the droplet size of said spray having a median diameter of less than about 10 microns;

introducing a finely divided spray of a second liquid reagent into the same reaction zone at a level below that of said first liquid reagent but substantially above the bottom of said zone, the droplet size of said second reagent spray having a median diameter of less than about 10 microns;

allowing the droplets of said first and second liquid reagents to travel unimpeded to the bottom of said zone;

maintaining the gas flow through said reaction zone at a rate which allows a contact time between the spray droplets of said liquid reagents and the gas stream of at least about 5 seconds;

removing settled out spray droplets containing the reaction products of both said first and second reagents with components of the gas stream from the bottom of the reaction zone, and

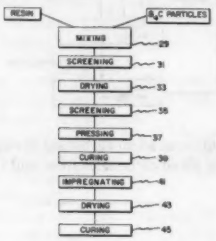
separately removing the gas stream from a lower level of the reaction zone.

4,225,567

SOLUTION POLYMERIZATION OF CHLOROPHOSPHAZENE WITH SULFUR MODIFIER

Adel F. Halasa, Bath, and James E. Hall, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 5, 1976, Ser. No. 739,212
Int. Cl.[2] C01B *25/10*
U.S. Cl. 423—300 **13 Claims**



1. In a process for producing substantially linear polydichlorophosphazenes in which the degree of polymerization is between about 20 and 50,000, from cyclic oligomers represented by the general formula $(NPCl_2)_n$ in which n is an integer from 3 to about 15, the improvement which comprises conducting the polymerization of said cyclic oligomers in solution in a solvent for said oligomers, for up to about 300 hours and at a temperature between 140° and 225° C., in the presence of an amount of sulfur or sulfur-containing compound, effective to prevent the formation of appreciable amount of gel, said solvent being a liquid having a dielectric constant of at least two, and being a solvent for said sulfur or sulfur-containing compound, and being a solvent for said dichlorophosphazenes, and recovering the resulting polydichlorophosphazene produced by said process.

4,225,568

PROCESS FOR THE PURIFICATION OF AN IMPURE PHOSPHORIC ACID

Alain Leveque, Paris, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 6, 1979, Ser. No. 9,918
Claims priority, application France, Jan. 24, 1979, 79 01751
Int. Cl.[2] C01B *25/16*
U.S. Cl. 423—321 S **22 Claims**

1. A process for the purification of wet process phosphoric acid containing sulfate ion in an amount by weight such that the ratio SO_4/P_2O_5 is greater than 50 ppm, comprising countercurrently liquid-liquid extracting an aqueous solution of said wet process phosphoric acid with a water-insoluble organic solvent; next, phase separating and countercurrently washing and neutralizing the organic phase effluent of said countercurrent liquid-liquid extraction, in at least two-stages, with an aqueous wash solution of a pH increasing amount of an alkali metal or ammonium compound; and thence recovering from said washed organic phase effluent purified phosphoric acid having a content of SO_4 to P_2O_5 of less than 50 ppm.

4,225,569

CARBON-CARBON COMPOSITE MATERIAL AND METHOD FOR ITS PRODUCTION

Hironori Matsui, Hirakata, and Takashi Ito, Ibaraki, both of Japan, assignors to Kanebo Ltd., Japan

Filed Jun. 8, 1978, Ser. No. 913,692
Claims priority, application Japan, Jun. 14, 1977, 52-70807
Int. Cl.[2] C01B *31/02*
U.S. Cl. 423—445 **14 Claims**

1. A method for producing a carbon-carbon composite material consisting of a matrix carbon and a fibrous reinforcing carbon, which comprises shaping a resinous composition consisting of 30 to 90% by weight of cured novolac fibers having a methylol group content of at least 3.5% by weight and 10 to 70% by weight, as the solids content after curing, of a phenolic resin; curing the shaped product; heating the cured product in an non-oxidizing atmosphere to at least 800° C. in such a manner that at least within a temperature range of 200° to 500° C., the heating is carried out at a rate of not more than 60° C./hour; and firing the product at the final temperature reached.

9. A carbon-carbon composite material consisting of a matrix carbon and a fibrous reinforcing carbon, said matrix carbon and fibrous carbon consisting substantially of amorphous optically isotropic carbon and forming an interface without an intervening third material, wherein said composite material has a fracture surface showing a uniform vitreous light reflection, but when it is used as an anode and electrolytically etched in sulfuric acid-acidified water, a difference in the degree of etching arises between the matrix carbon and the fibrous carbon produced by the method of claim **1**.

4,225,570

CARBON BLACK PRODUCTION

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 19, 1977, Ser. No. 834,200
Int. Cl.[2] C01B *31/02*; C09C *1/48*
U.S. Cl. 423—456 **5 Claims**

1. In a method for producing carbon black comprising:

(a) introducing a carbonaceous feed material to be decomposed into a reactor generally along the longitudinal axis of the reactor, said reactor being of generally circular transverse cross section at the upstream region thereof;

(b) introducing at least one stream of hot gases into the reactor at said upstream region in a direction generally tangential to the side wall of the reactor and in a direction in a plane generally perpendicular to the axis of the reactor, the at least one stream of hot gases being introduced in an amount and at a temperature such as to decompose the feed material to produce carbon black, wherein a pressure drop exists along the longitudinal axis of the reactor;

the improvement comprising:

(c) introducing at least one stream of hot gases in a direction generally tangential to the side wall of the reactor in a plane which is at an angle of about 30° to 60° with respect to the longitudinal axis of the reactor in a direction toward the downstream end of the reactor to reduce the pressure drop along the longitudinal axis of the reactor.

4,225,571

ELECTROWINNING OF METAL FROM SULPHIDE ORES AND RECOVERY OF WATER SOLUBLE SULPHIDES

Robert N. de Denus, Wishart, Australia, assignor to Berenice Isabelle de Denus; David Vivian Smith and Jennifer May Smith, all of Queensland, Australia

Filed Mar. 9, 1979, Ser. No. 19,045
Int. Cl.[3] C01B *17/22, 17/42*; C01C *1/20*; C25C *1/22*
U.S. Cl. 423—561 A **14 Claims**

1. A method of obtaining antimony from stibnite ore including the steps of:

(a) leaching in a leaching vessel the stibnite ore in a concentrated solution of a water soluble sulphide and in the absence of OH^- wherein the concentration of sulphide ion is approximately the same as the concentration of antimony whereby the following reaction occurs:

$$Sb_2S_3 + S^{-2} \rightarrow 2SbS_2^-$$

(b) transferring the leaching solution containing SbS_2^- to a separate reaction vessel and adding a solution containing

OH^- in an amount sufficient to yield an OH^- concentration in the solution approximately the same as the concentration of antimony, and

(c) electrolyzing the solution after step (b) in an electrolytic cell to deposit antimony metal at the cathode according to the reaction:

$$Ti\ 4SbS_2 + 12OH^- \rightarrow 4Sb \downarrow + 8S^{-2} + 6H_2O + 3O_2.$$

3. A method as claimed in claim 1 wherein a portion of the solution obtained after step (c) is recycled to a leaching vessel wherein step (a) is carried out.

4. A method as claimed in claim 3 wherein the recycling is effected when the solution of step (c) is depleted of its antimony concentration to between 25–35 g/liter.

5. A method as claimed in claim 4 wherein the sequence of step (a), step (b) and step (c) is further carried out until again the antimony concentration of the electrolysed solution is between 25–35 g/liter, and portion of said electrolysed solution is again recycled for a further leaching step, the said sequence being repeated a plurality of times.

6. A method as claimed in claim 4 or 5 wherein the solution containing 25–35 g/liter of antimony is further electrolysed so that a final concentration of 5 g/liter is obtained before the water soluble sulphide is isolated.

4,225,572

CATALYTIC IRON OXIDE FOR LIME REGENERATION IN CARBONACEOUS FUEL COMBUSTION

Ming-Shing Shen, Rocky Point, and Ralph T. Yang, Middle Island, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 918,618, Jun. 23, 1978. This application Sep. 29, 1978, Ser. No. 947,664

Int. Cl.³ C01B *13/14*; C01F *5/02*; C01B *17/00*

U.S. Cl. 423—638 **8 Claims**

1. A method for the regeneration of lime comprising heating fluidized bed particulates comprising calcium sulfate and iron oxide embedded therein from 900° C. to 1150° C. to generate sulfurous oxide therefrom, and wherein the embedded iron oxide is present in an amount of about 0.5 to 10 percent by weight of the total calcium on a CaO basis, and wherein the regeneration is increased by 25 to 75 percent by the presence of the embedded iron oxide, and method further comprising a first step of forming the iron oxide in said lime by first forming an integrally adhering coating of an iron compound on said lime, then decomposing said iron compound.

4,225,573

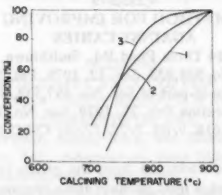
PROCESS FOR REDUCTIVE CALCINING OF MAGNESIUM SULFATE

Sadami Kobayashi, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation of Ser. No. 869,610, Jan. 16, 1978, abandoned. This application Jan. 12, 1979, Ser. No. 3,009

Int. Cl.³ C01F *5/12*

U.S. Cl. 423—638 **9 Claims**



1. A process for converting magnesium sulfate into magnesium oxide which comprises calcining the magnesium sulfate in the presence of lignite coke or soot as a reducing agent at a temperature of from 750° C. to 850° C.

4,225,574

METHOD FOR DETERMINATION OF FREE HORMONES IN BIOLOGIC FLUIDS

Pier B. Romelli, Rho, and Francesco Pennisi, Milan, both of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Feb. 23, 1978, Ser. No. 880,411

Claims priority, application Italy, Mar. 10, 1977, 21128 A/77

Int. Cl.² G01N *33/16*; A61K *43/00*

U.S. Cl. 424—1 **11 Claims**

1. A process for determining the concentration of the free fraction of a hormone in a biological fluid containing bound and unbound hormone in an equilibrium state which comprises contacting a sample of the biological fluid with a solid matrix capable of reversibly selectively adsorbing the free hormone, whereby the equilibrium between the bound and unbound fraction of the hormone remains substantially undisturbed and determining the amount of hormone bound to said solid matrix directly correlating the adsorbed hormone with the concentration of the free hormone present in said body fluid.

4,225,575

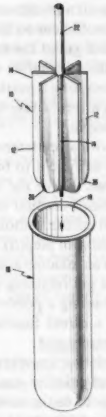
METHOD AND APPARATUS FOR PERFORMING IN VITRO CLINICAL DIAGNOSTIC TESTS USING A SOLID PHASE ASSAY SYSTEM

Roger N. Piasio, Yarmouth; David A. Perry, Portland, both of Me., and Pangal N. Nayak, Belmont, Mass., assignors to Ventrex Laboratories, Inc., Portland, Me.

Continuation-in-part of Ser. No. 805,480, Jun. 10, 1977, abandoned. This application May 15, 1978, Ser. No. 905,552

Int. Cl.² G01N *33/16*; A61K *43/00*; B01J *1/22*

U.S. Cl. 424—1 **40 Claims**



1. A process for determining the amount of mobile component contained in a fluid sample which reacts with a fixed component immobilized on a solid phase insert matrix to produce a measurable change which is a function of the amount of the mobile component comprising the steps of:

(a) providing a fluid receptacle containing a fluid sample having an unknown amount of the mobile component which is to be measured,

(b) providing a removable impermeable unitary insert matrix comprising a handle member having attached at one end a plurality of elements having essentially smooth plane or curved surfaces so arranged with respect to one another and the handle member and of a size and shape such that when said matrix is inserted into said fluid receptacle, said matrix extends substantially throughout the depth of said fluid sample and the average diffusion distance of molecules of said mobile component to the surfaces of said elements is greatly reduced relative to the average diffu-

sion distance of molecules of said mobile component to the fluid receptacle when no matrix is present therein, and having the fixed component immobilized on the surfaces of said elements, capable of reacting with said mobile component at a rate or to an extent measurable as a function of the concentration of said mobile component,

(c) placing the insert in the fluid receptacle to cause contact between the fixed component of the insert matrix with the mobile component of unknown amount contained in the fluid sample for a given time interval to permit a reaction to occur, and

(d) measuring the change which is a function of the concentration of the mobile component to determine the amount of the mobile component.

4,225,576

COMBINED RADIOIMMUNOASSAY FOR TRIIODOTHYRONINE AND THYROXINE

Charles E. Denning, and Lloyd A. Schick, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 20, 1978, Ser. No. 962,398

Int. Cl.[2] G01N *33/16*

U.S. Cl. 424—1 **9 Claims**

1. A method for the combined radioimmunoassay for triiodothyronine (T-3) and thyroxine (T-4) in a serum or plasma sample comprising the steps of:

(a) contacting a crosslinked dextran gel at a pH of at least 11 with said sample and with radiolabeled T-3 and T-4 labeled with the same radioisotope,

(b) washing said gel with an alkaline aqueous solution having a pH less than 11,

(c) incubating said gel with a predetermined first amount of an antibody to T-3 insufficient to bind all of the radiolabeled T-3 bound to said gel at the conclusion of step(b),

(d) washing said gel with an alkaline solution having a pH less than 11, said gel retaining a portion of the radiolabeled T-3 bound thereto as a direct function of the amount of T-3 present in said sample,

(e) incubating said gel with a predetermined second amount of an antibody to T-3 sufficient to bind all of the radiolabeled T-3 bound to said gel at the conclusion of step(d) and with a predetermined amount of an antibody to T-4 insufficient to bind all of the radiolabeled T-4 bound to said gel at the conclusion of step(d),

(f) washing said gel with an alkaline aqueous solution having a pH less than 11, said gel retaining substantially no radiolabeled T-3 while retaining a portion of the radiolabeled T-4 bound thereto as a direct function of the amount of T-4 present in said sample, and

(g) comparing (1) the relative amounts of radiolabeled T-3 and T-4 retained by said gel after washing steps(d) and (f), respectively, with respect to the amounts of radiolabeled T-3 and T-4 contacted with said gel in step(a), to (2) such relative amounts obtained by performing the same method on standard samples containing known amounts of T-3 and T-4.

4,225,577

IONIC POLYIODO BENZENE DERIVATIVES USEFUL AS X-RAY CONTRAST MEDIA

Guy Tilly; M. Jean-Charles Hardouin, and Jean Lautrou, all of Aulnay-sous-Bois, France, assignors to Guerbet S.A., Aulnay-sous-Bois, France

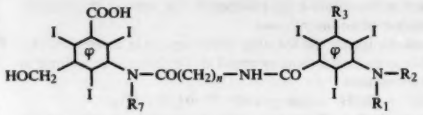
Filed May 29, 1979, Ser. No. 43,046

Claims priority, application United Kingdom, May 31, 1978, 24828/78

Int. Cl.[2] A61K *29/02;* **C07C** *101/72*

U.S. Cl. 424—5 **6 Claims**

1. A compound selected from the compounds of the formula (I):



(I)

in which:

n is an integer from 1 to 5 inclusive,

R_1 is selected from hydrogen and C_{1-4} alkanoyl,

R_2 is selected from hydrogen, C_{1-4} alkanoyl and C_{1-4} alkyl,

R_3 is selected from hydrogen, a group of the formula

and a group of the formula —$CONHR_6$, in which:

R_4 is selected from hydrogen and C_{1-4} alkanoyl,

R_5 is selected from hydrogen, C_{1-4} alkanoyl and C_{1-4} alkyl,

R_6 is selected from hydrogen and C_{1-4} alkyl,

R_7 is selected from hydrogen and methyl, and

C_{1-4} alkyl esters thereof and a salt thereof with pharmaceutically acceptable bases.

4. X-ray contrast medium, comprising an effective amount of a compound of the formula (I) as defined in claim **1**, in a pharmaceutically acceptable carrier.

4,225,578

ANIMAL COLLARS HAVING ECTOPARASITICIDAL ACTIVITY

Miklos von Bittera, Leverkusen; Hans U. Sieveking, Cologne; Wilhelm Stendel, Wuppertal, and Herbert Voege, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 891,093, Mar. 28, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,427

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2715597; Dec. 29, 1977, 2758570

Int. Cl.[2] A01N *09/36, 17/00;* **A01K** *27/00, 29/00*

U.S. Cl. 424—14 **7 Claims**

1. A process for the preparation of an animal collar comprising impregnating an absorbent carrier selected from the group consisting of natural leather and synthetic leather with a solution of 2-isopropoxyphenyl N-methylcarbamate, thereafter removing the solvent and optionally, after-treating one or both surfaces.

4,225,579

MEANS AND METHOD FOR IMPROVING DEFENSES AGAINST CARIES

Israel Kleinberg, 14 Three Pond Rd., Smithtown, N.Y. 11787

Division of Ser. No. 868,933, Jan. 12, 1978, Pat. No. 4,154,813, and a continuation-in-part of Ser. No. 697,538, Jun. 18, 1976. This application Feb. 27, 1979, Ser. No. 15,635

Int. Cl.[3] A61K *9/68, 7/22, 37/00;* **C07C** *103/52*

U.S. Cl. 424—48 **9 Claims**

1. A composition selected from the group consisting of a dental care product, a food product and a chewing gum which comprises a source of pH adjusting compound or precursor thereof having 2–4 amino acid units of which at least one unit is arginine, in an amount effective to combat caries by controlling oral pH.

4,225,580

METHOD FOR CLEANSING FLUID DISCHARGING SKIN SURFACES, WOUNDS AND MUCOUS MEMBRANES AND MEANS FOR CARRYING OUT THE METHOD

Ulf S. E. Rothman, Bjärred, and Sten A. L. Jacobsson, Malmö, both of Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Continuation of Ser. No. 437,558, Jan. 27, 1974, abandoned. This application Oct. 2, 1975, Ser. No. 619,148

Int. Cl.[2] A61K *31/74*

U.S. Cl. 424—78 13 Claims

1. A method for cleansing an infected sore which method comprises applying thereto an effective amount of spherical dry polymer particles within the size range of 20 to 500μ, said polymer particles consisting of dextran cross-linked with epichlorohydrin so as to form a three-dimensional network held together by bonds of covalent nature, one gram of which swells in the presence of water to absorb at least 0.5 grams of water but less than 15 grams of water, the swellability of the polymer particles in water being such that the polymeric particles in swollen state have a pore size which permits the penetration thereinto of low molecular weight materials discharging from the sore but which completely or substantially excludes penetration thereinto of materials discharging from the sore that have a molecular weight greater than about 50,000.

4,225,581

BIOLOGICAL MATERIALS

Jörg Kreuter, 25 Münstergasse, CH-8001 Zurich, and Peter P. Speiser, 26 Wassbergstrasse, CH-8127 Forch, both of Switzerland, assignors to Jorg Kreuter and Peter Paul Speiser, both of, Switzerland

Continuation of Ser. No. 862,213, Dec. 19, 1977, abandoned, which is a continuation of Ser. No. 666,611, Mar. 15, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,680

Claims priority, application Switzerland, Mar. 20, 1975, 3573/75; May 13, 1975, 6125/75

Int. Cl.[2] A61K *39/12*

U.S. Cl. 424—88 2 Claims

1. Submicroscopic particles of a polymerized styrene or acrylic monomer on which is absorbed an antigen, in suspension or colloidical solution in a sterile aqueous medium, wherein the submicroscopic particles have a particle size of from 50 to 500 nm diameters, whereby the submicroscopic particles are formed by suspending the polymeric particles in a liquid medium containing the antigen.

4,225,582

VACCINE FOR EQUINE RHINOPNEUMONITIS

Robert A. Crandell, Champaign, Ill., assignor to The University of Illinois Foundation, Urbana, Ill.

Filed Mar. 8, 1979, Ser. No. 18,458

Int. Cl.[3] A61K *39/12*

U.S. Cl. 424—89 5 Claims

1. A method for treatment of a horse to confer immunity to infection by Equid Herpesvirus Type 1, said method consisting of administrating a vaccine comprising an immunologically effective amount of the live Bovine Herpesvirus A.T.C.C. No. VR-2003.

4,225,583

INTRA-RESPIRATORY VACCINE FOR PREVENTION OF *BORDETELLA BRONCHISEPTICA* INFECTION AND METHOD OF USE

William P. Switzer, Ames, Iowa, and Daniel O. Farrington, Terre Haute, Ind., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Dec. 7, 1978, Ser. No. 967,477

Int. Cl.[3] A61K *39/02*

U.S. Cl. 424—92 12 Claims

1. An intra-respiratory vaccine for animals subject to *Bordetella bronchiseptica* infection, comprising an aqueous suspension of viable cells of the modified *Bordetella bronchiseptica* identified as ATCC strain No. 31437, said strain being capable of propagation at 37° C. in a suitable culture medium, said aqueous suspension containing at least 2×10^3 of said viable cells per milliliter.

4,225,584

ANIMAL FEEDS CONTAINING A MIXTURE OF NITROVIN, CARBADOX OR OLAQUINDOX AND PROTEOLYTIC ENZYMES

Günter Hiller, Erkrath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,710

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1977, 2755126; Jan. 20, 1978, 2802397

Int. Cl.[2] A61K *37/48*

U.S. Cl. 424—94 17 Claims

1. A high efficiency animal feed based on carbohydrates, protein and fats and containing from 5 to 350 ppm of a growth promoter selected from the group consisting of Nitrovin, Carbadox and Olaquindox and a content of proteolytic enzyme selected from the acid proteases from *Aspergillus niger* or *Rhizopus rhizopodiformis*, or a mixture thereof, in such an amount that the enzymatic activity is from 0.05 to 2.5 mTU/gm of said animal feed.

4,225,585

FUNGICIDAL AND BACTERICIDAL COMPOSITIONS AND METHOD FOR PROTECTING PLANTS BY USE THEREOF

Takao Kida, Yokosuka; Zuisho Terahara, Yokohama; Toshiro Shida, Yokohama; Hiroshi Mizuno, Yokohama; Yoshiyuki Takahara, Tokyo, and Yoshiteru Hirose, Kamakura, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Filed May 23, 1978, Ser. No. 908,750

Int. Cl.[2] A01N *9/00*; A61K *31/71, 35/00*

U.S. Cl. 424—114 2 Claims

1. A method for combatting fungi and bacteria diseases on plants which comprises applying to the plant disease fungi and bacteria on rice or vegetable plants a fungicidal or bactericidal amount of angustmycin A or angustmycin C wherein said plant disease fungi or bacteria are the causative organism of rice leaf blight, rice blast, cucumber bacterial spot, cucumber anthracnose, cucumber phytophthora rot, cucumber powdery mildew, citrus melanose, citrus canker or tomato late blight.

4,225,586

ANTIBIOTIC SB-72310

Akira Imada, Nishinomiya; Kazuhiko Kintaka, Takatsuki, and Konomi Haibara, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 15, 1978, Ser. No. 971,090

Claims priority, application Japan, Oct. 3, 1978, 53/122277

Int. Cl.[2] A61K *35/00*

U.S. Cl. 424—117 3 Claims

1. A member selected from the group consisting of antibiotic SB-72310 having the following characteristics, and a sodium, potassium, lithium or ammonium salt thereof:

(1) Melting point: Not lower than 110° C.

(2) Appearance: White powder

(3) Elemental analysis: (%)

C	34.40 ± 0.5
H	5.50 ± 0.5
N	13.30 ± 0.5
O	38.90 ± 1.0
S	7.75 ± 0.5

(as dried at 40° C. for 6 hours over phosphorus pentoxide under reduced pressure)
(4) Molecular weight: 400±20 (by titrometry)
(5) Specific rotation: $[\alpha]_D^{23}+0.5°\pm5°$ (c=0.93, H_2O)
(6) Ultraviolet absorption spectrum: No characteristic absorption over 210 nm
(7) Infrared absorption spectrum [dominant peaks (KBr) (cm^{-1})]: 1770, 1650, 1530, 1240, 1043
(8) Solubility:
Insoluble in petroleum ether, hexane, diethyl ether, benzene, ethyl acetate, chloroform; sparingly soluble in ethanol, pyridine, acetone; soluble in methanol, dimethylsulfoxide; readily soluble in water
(9) Color reactions:
Positive ninhydrin, potassium permanganate reactions; negative ferric chloride-potassium ferricyanide, Sakaguchi, Molisch reactions; doubtful positive Ehrlich reaction
(10) Basicity, neutrality or acidity: Acid.

4,225,587

METHOD OF REPELLING INSECTS BY SYSTEMIC ACTION IN HUMANS ON SULFUR AND SULFUR CONTAINING SUBSTANCES

Laurie F. Hess, c/o Resources Engineering Inc., 2025 Eye St. NW., Suite 506, Washington, D.C. 20006

Filed Dec. 5, 1977, Ser. No. 857,501
Int. Cl.³ A01N *59/02;* **A61K** *33/04*
U.S. Cl. 424—162 **16 Claims**

1. A method of repelling chewing, sucking, and biting insects from the human body which comprises initially introducing into the body exposed to said insects an amount of sulfur, or sulfur mixed or combined with other substances and utilizing the metabolism in the body to produce sulfur compounds repellant to insects on the exposed surfaces of the body in sufficient concentration to repel said insects.

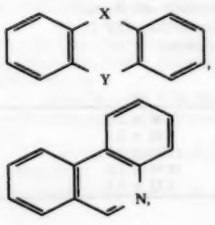
4,225,588

ANTIBIOTIC MIXTURES

Geoffrey W. Grigg, Lane Cove, and Wolfgang H. F. Sasse, Malvern East, both of Australia, assignors to Commonwealth Scientific & Industrial Research Organization, Campbell, Australia

Division of Ser. No. 897,021, Apr. 17, 1978. This application Nov. 28, 1978, Ser. No. 964,197
Claims priority, application Australia, Apr. 21, 1977, PC9844
Int. Cl.² A61K *37/02;* **C07C** *103/52*
U.S. Cl. 424—177 **7 Claims**

1. A method for potentiating the antibiotic activity of phleomycin or bleomycin which comprises administering phleomycin, bleomycin or mixtures thereof in association with a compound having a basic ring structure selected from the group consisting of:



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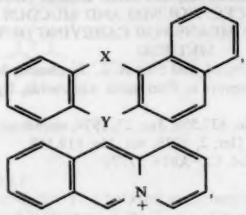
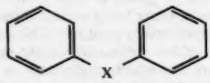
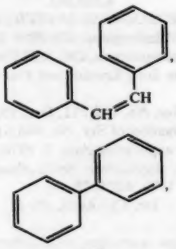


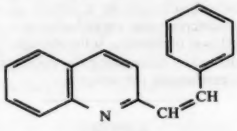
Wherein
X is CH; CH_2; N; NH; O; S
Y is CH; CH_2; N; O; S,



Wherein X is CH, CH_2, N or NH,



and



said compound including at least one nitrogen atom, either as a member of a heterocyclic ring or as a member of a ring substituent, said substituent being selected from the group consisting of amino, dialkylamino, trialkylamino and dialkylamino alkylamino, and carrying, or being capable of readily acquiring, one or two positive charges as a result of protonation or quaternization of said at least one nitrogen atom.

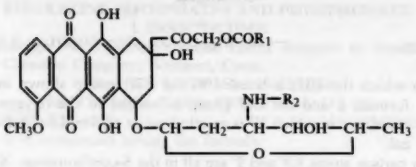
4,225,589

DAUNORUBICIN DERIVATIVES

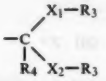
Jean-Bernard Ducep, Paris; Daniel Farge, Thiais; Gerard Ponsinet, Sucy-en-Brie, and Daniel Reisdorf, Thiais, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 740,769, Nov. 10, 1976, abandoned. This application Nov. 9, 1977, Ser. No. 849,761
Claims priority, application France, Nov. 12, 1975, 75 34450; Sep. 27, 1976, 76 28977; Sep. 27, 1976, 76 28978
Int. Cl.² A61K *31/70;* **C07G** *11/00*
U.S. Cl. 424—180 **20 Claims**

1. A daunorubicin derivative of the formula



wherein R_1 represents a group of the formula



in which (i) X_1 and X_2 both represent oxygen or both represent sulphur and the symbols R_3 each represent alkyl of 1 through 4 carbon atoms, phenyl or phenyl-substituted in the para-position by methyl, methoxy or methylthio, or together form an alkylene radical of 2 through 4 carbon atoms, or (ii) one of X_1 and X_2 represents oxygen and the other represents sulphur and the symbols R_3 together form an alkylene radical of 2 through 4 carbon atoms, and R_4 represents hydrogen, alkyl of 1 through 4 carbon atoms or phenyl, and R_2 represents hydrogen or trifluoroacetyl, or a non-toxic pharmaceutically acceptable acid addition salt of said derivative in which R_2 represents hydrogen.

19. A pharmaceutical composition for parenteral administration which comprises a therapeutically effective amount of a daunorubicin derivative of the formula specified in claim **1** or a nontoxic pharmaceutically acceptable acid addition salt of a said derivative in which R_2 represents hydrogen, in association with a sterile compatible injectable pharmaceutical carrier.

4,225,590

MALE FERTILITY-INHIBITING COMPOSITIONS OF 6-CHLORODEOXY-SACCHARIDES

Geoffrey M. H. Waites; William C. L. Ford; Riaz A. Khan, and Haydn F. Jones, all of Berkshire, England, assignors to Tate & Lyle Limited, London, England

Filed Mar. 14, 1978, Ser. No. 886,531

Claims priority, application United Kingdom, Mar. 14, 1977, 10694/77

Int. Cl.[3] **A61K** *31/70;* **C07H** *5/02*

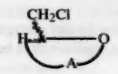
U.S. Cl. 424—180 **11 Claims**

1. A male fertility-inhibiting composition in unit dosage form, comprising a unit dosage amount of, as active ingredient, a 6-chlorodeoxy-mono-or-di-saccharide of the formula

(I)

where A represents the remainder of a ring selected from the group consisting of a pyranose ring or a furanose ring, and has the formula $C_4H_7O_3.OX$ (where OX is a substituent at the anomeric center and X is selected from the group consisting of a hydrogen atom and an aglycone, said aglycone being selected from the group consisting of pyranose, furanose and the 6'-chlorodeoxy derivative thereof) in association with a physiologically acceptable carrier or excipient.

7. A method of controlling fertility in men or male animals, in which a 6-chlorodeoxymono-or-di-saccharide of the formula



(I)

where A represents the remainder of a ring selected from the group consisting of a pyranose ring and a furanose ring, and has the formula $C_4H_7O_3.OX$ (where OX is a substituent at the anomeric center and X is selected from the group consisting of a hydrogen atom and an aglycone, said aglycone being selected from the group consisting of pyranose, furanose and the 6'-chlorodeoxy derivative thereof, is administered thereto in an amount effective to control fertility.

4,225,591

2,6-DIAMINONEBULARINES

Ryuji Marumoto, Minoo; Masao Tanabe, Ibaraki, and Yoshiyasu Furukawa, Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1978, Ser. No. 953,254

Claims priority, application Japan, Oct. 21, 1977, 52-127148

Int. Cl.[3] **A61K** *31/70;* **C07H** *17/00*

U.S. Cl. 424—180 **7 Claims**

1. A compound selected from the group consisting of

N^2-(m-methylphenyl)-2,6-diaminonebularine,

N^2-(m-methoxyphenyl)-2,6-diaminonebularine,

N^2-(m-chlorophenyl)-2,6-diaminonebularine, and

N^2-(m,p-dimethylphenyl)-2,6-diaminonebularine

or a pharmaceutically acceptable acid addition salt thereof.

4,225,592

COMPLEXES OF OLIGO- AND POLYGALACTURONIC ACIDS FORMED WITH ESSENTIAL METAL IONS AND PHARMACEUTICAL PREPARATIONS CONTAINING THE SAME

Bela Lakatos, 17 Tarcsay V. utca, 1026 Budapest; Julia Meisel nee Agoston, 39-41 Ulaszlo ut, 1113 Budapest, and Mihaly Varju, 9 Kuny utca, 1012 Budapest, all of Hungary

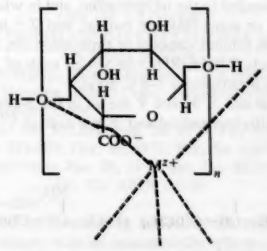
Division of Ser. No. 901,835, May 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 782,050, Mar. 28, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,421

Claims priority, application Hungary, Mar. 31, 1976, MA 2754

Int. Cl.[3] **A61K** *31/70;* **C07H** *23/00*

U.S. Cl. 424—180 **1 Claim**

1. A method for treating a deficiency of at least one of the element selected from the group consisting of iron(II), copper(I), copper(II), magnesium(II), cobalt(II), manganese(II), zinc(II), chromium(III), molybdenum(V), vanadium(IV) and nickel(II), in humans, comprising administering to a human suffering from said deficiency an effective amount per day of said at least one of said elements plus potassium in the form of their complex formed with an oligo- or plygalacturonic acid of the formula



wherein

n is an integer from 10 to 145,

M is said at least one metal cation selected from said group plus potassium, and

Z is an integer corresponding to the charge or the valence number of the metal atom, said amount being effective to relieve said deficiency.

4,225,593

GROWTH PROMOTION

David H. Davies, Macclesfield, and Geoffrey L. F. Norris, Sandbach, both of England, assignors to Imperial Chemical Industries Limited, London, England

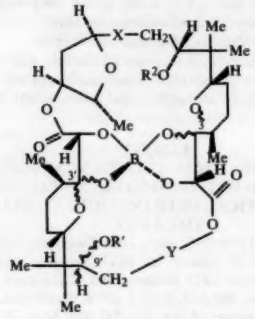
Filed Dec. 4, 1978, Ser. No. 967,796

Claims priority, application United Kingdom, Dec. 22, 1977, 53448/77; May 8, 1978, 18269/78

Int. Cl.[2] A61K *31/69*

U.S. Cl. 424—185 **6 Claims**

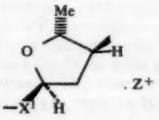
1. A method, for use in the husbandry of domesticated ruminant animals to improve their rate of growth or efficiency of their food conversion, which comprises orally administering to such animals an effective amount of a compound of the formula:



I

wherein

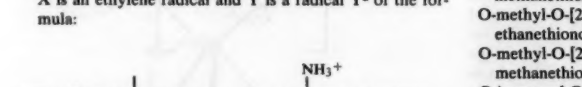
R^1 and R^2 are each a hydrogen atom or an acetyl radical, and either carbon atoms 3, 3' and 9' are all in the R-configuration, X is an ethylene or trans-vinylene radical and Y is a radical Y^1 of the formula:



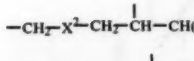
II

in which X^1 is bonded to the CH_2 group and the ring carbon atom is bonded to the oxygen atom, and in which X^1 is an ethylene or trans-vinylene radical, and Z^+ is a sodium, potassium, lithium, caesium or ammonium ion, or an ion of the formula $R^3R^4R^5R^6N^+$ in which each of R^3, R^4, R^5 and R^6 is hydrogen or 1–6 C alkyl;

or carbon atoms 3, 3' and 9' are all in the S-configuration, X is an ethylene radical and Y is a radical Y^2 of the formula:



or



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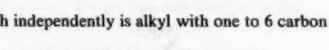
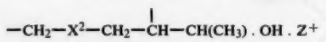


in which the CH_2 is bonded to the CH_2 group shown in formula I, and the CH group is bonded to the oxygen atom, and in which X^2 is an ethylene or cis-vinylene radical;

or carbon atoms 3,3' and 9' are all in the S-configuration, X is an ethylene radical and Y is a radical Y^3 of the formula:



wherein X^2 and Z^+ have the meanings stated above.

4,225,594

COMBATING INSECTS AND ACARIDS WITH O-ALKYL-O-[2-SUBSTITUTED-6-ALKOXY-PYRIMIDIN(-4)YL]-THIONOPHOSPHONIC ACID ESTERS

Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne; Wolfgang Behrenz, Overath; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

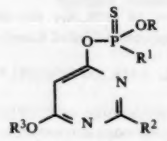
Division of Ser. No. 829,553, Aug. 31, 1977, Pat. No. 4,150,159. This application Jan. 9, 1979, Ser. No. 2,128

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2642981

Int. Cl.[2] A01N *9/36*; C07D *239/52*

U.S. Cl. 424—200 **9 Claims**

1. An O-alkyl-O-[2-substituted-6-alkoxypyrimidin(4)yl]-thionophosphonic acid ester of the formula



in which

R and R^3, each independently is alkyl with one to 6 carbon atoms,

R^1 is phenyl or alkyl with 1 to 4 carbon atoms, and

R^2 is dialkylamino with 1 to 4 carbon atoms per alkyl radical.

9. The method according to claim 4, in which said compound is

O-ethyl-O-[2-dimethylamino-6-methoxy-pyrimidin(4)yl]-methanethionophosphonic acid ester,

O-methyl-O-[2-dimethylamino-6-methoxy-pyrimidin(4)yl]-ethanethionophosphonic acid ester,

O-methyl-O-[2-dimethylamino-6-methoxy-pyrimidin(4)yl]-methanethionophosphonic acid ester,

O-isopropyl-O-[2-dimethylamino-6-methoxy-pyrimidin(-4)yl]-methanethinophosphonic acid ester, or

O-n-pentyl-O-[2-diethylamino-6-methoxy-pyrimidin(4)yl]-methanethionophosphonic acid ester.

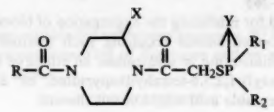
4,225,595

PIPERAZINE PHOSPHATES AND PHOSPHONATE INSECTICIDES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 1, 1979, Ser. No. 35,043
Int. Cl.[3] A61K *31/495;* C07D *295/18, 241/06*
U.S. Cl. 424—200 49 Claims

1. A compound having the formula



in which

R is selected from the group consisting of 1–4 carbon alkoxy, phenyloxy and 1–6 carbon alkylthio;

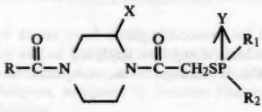
R_1 is selected from the group consisting of 1–4 carbon alkyl and 1–4 carbon alkoxy;

R_2 is 1–6 carbon alkoxy;

X is hydrogen or methyl; and

Y is sulfur or oxygen.

26. A method of controlling insects or mites which comprises applying to the insects or mites or the locus thereof an insecticidally or miticidally effective amount of a compound having the formula



in which

R is selected from the group consisting of 1–4 carbon alkoxy, phenyloxy, and 1–6 carbon alkylthio;

R_1 is selected from the group consisting of 1–4 carbon alkyl, and 1–4 carbon alkoxy;

R_2 is 1–6 carbon alkoxy;

X is hydrogen or methyl; and

Y is sulfur or oxygen.

4,225,596

METHOD FOR TREATING CALCIUM IMBALANCE AND IMPROVING CALCIUM ABSORPTION IN MAMMALS

Hector F. DeLuca, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 13, 1978, Ser. No. 951,320
Int. Cl.[3] A61K *31/59*
U.S. Cl. 424—236 5 Claims

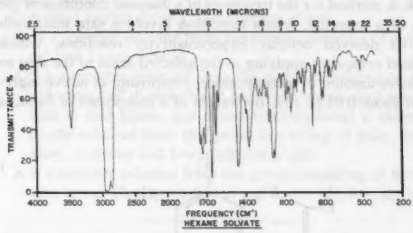
1. A method for increasing the calcium absorption and retention within the body of mammals displaying evidence of, or having a physiological tendency toward, loss of bone mass, which comprises administering internally to said mammals, in a therapeutically effective amount, at least one compound selected from the group consisting of 1α-hydroxycholecalciferol, 1α-hydroxyergocalciferol, 1,25-dihydroxycholecalciferol, 1,25-dihydroxyergocalciferol and 1,24,25-trihydroxycholecalciferol.

4,225,597

BECLOMETHASONE DIPROPIONATE-HEXANE SOLVATE AND AEROSOLS PREPARED THEREFROM

Lawrence E. Finckenor, Wayne, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Oct. 1, 1976, Ser. No. 728,570
Int. Cl.[2] A61K *31/56*
U.S. Cl. 424—243 5 Claims



1. A solid composition of matter which consists of a beclomethasone dipropionate-n-hexane solvate characterized by an infrared absorption spectra substantially as shown in FIG. 1 and comprising 94–96% by weight beclomethasone dipropionate and 4–5% by weight n-hexane.

4,225,598

2-CYCLOPROPYLAMINO-4,6-DIAMINO-S-TRIAZINE

Hans U. Brechbühler, Basel, Switzerland; Verena Laanio, Arisdorf, and Dagmar Berrer, Riehen, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 869,990, Jan. 16, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,667, Aug. 15, 1977, abandoned. This application Nov. 21, 1978, Ser. No. 962,839
Claims priority, application Switzerland, Aug. 19, 1976, 10558/76
Int. Cl.[2] C07D *251/70;* A01N *9/22*
U.S. Cl. 424—249 6 Claims

1. 2-Cyclopropylamino-4,6-diamino-s-triazine and acid addition salts thereof.

3. A method for combatting insects which comprises applying to their developmental stages an insecticidally effective amount of 2-cyclopropylamino-4,6-diamino-s-triazine or an acid addition salt thereof.

4,225,599

USE OF 1-LOWER ALKOXY-4-TRICHLOROMETHYLPHTHALAZINES AS AN INSECTICIDE

Eugene F. Rothgery, North Branford, and Hansjuergen A. Schroeder, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 937,692, Aug. 28, 1978, Pat. No. 4,179,559, and Ser. No. 844,004, Oct. 20, 1977, Pat. No. 4,139,622. This application Jun. 28, 1979, Ser. No. 53,016
Int. Cl.[3] A01N *43/48*
U.S. Cl. 424—250 2 Claims

1. A method for controlling insects which comprises contacting said insects with an insecticidally effective amount of 1-lower alkoxy-4-trichloromethylphthalazine; said lower alkoxy groups having from one to four carbon atoms.

4,225,600

COMPOSITIONS AND METHODS FOR TREATING CERTAIN SKIN CONDITIONS

Brian C. Meakin, East Leake, England, assignor to Fisons Limited, London, England

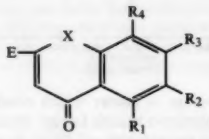
Filed Apr. 18, 1978, Ser. No. 897,415

Claims priority, application United Kingdom, May 4, 1977, 18617/77

Int. Cl.[2] **A61K** *31/47, 31/41, 31/35*

U.S. Cl. 424—258 **14 Claims**

14. A method for the treatment of a diseased condition of the skin of a mammal, which condition involves skin mast cells and/or delayed cellular hypersensitivity reactions, which method comprises applying to the affected areas of the skin an effective amount of a composition comprising as active ingredient about 0.01 to 10% by weight of a compound of formula I,



I

in which R_1 represents hydrogen, hydroxy or $—NR_5R_6$, in which R_5 and R_6, which may the same or different, each represents hydrogen or alkyl C 1 to 6,

an adjacent pair of R_2, R_3 and R_4 form a $—(CH_2)_4—$chain and the remaining substituent R_2 or R_4 represents alkyl C1 to 9,

E represents a 5-(1H)tetrazolyl- or a —COOH group, and

X represents oxygen or a group $—NR_7—$in which R_7 may be hydrogen or alkyl C 1 to 6,

or a pharmaceutically acceptable salt, or, when E is a —COOH group, a lower alkyl ester thereof, an ester thereof derived from a di-lower alkyl amino substituted alkanol, a lower acyloxy-lower alkyl ester thereof or a bisester thereof derived from a di(hydroxy-lower alkyl)ether, or an unsubstituted or a mono- or di- C 1 to 6 alkyl amide thereof, together with a mixture of a solvent for the active ingredient and a non-solvent for the active ingredient, the solvent and the non-solvent being miscible in the relevant proportions and the proportion of the non-solvent being such that the active ingredient forms a substantially saturated solution in the mixture.

4,225,601

3-HYDROXY OR HYDROXYMETHYL-5-(4-PYRIDINYL)2(1H)-PYRIDINONES, USEFUL AS CARDIOTONIC AGENTS AND THEIR PREPARATION

George Y. Lesher, and Chester J. Opalka, Jr., both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 73,885

Int. Cl.[2] **C07D** *401/04;* **A61K** *31/44*

U.S. Cl. 424—263 **9 Claims**

1. 3-(Hydroxy or hydroxymethyl)-5-(4-pyridinyl)-2(1H)-pyridinone or pharmaceutically-acceptable acid-addition salt thereof.

4. A cardiotonic composition for increasing cardiac contractility, said composition comprising a pharmaceutically-acceptable inert carrier and, as the active component thereof, and effective amount of the cardiotonic 3-(hydroxy or hydroxymethyl)-5-(4-pyridinyl)-2(1H)-pyridinone or pharmaceutically-acceptable acid-addition salt thereof.

4,225,602

TETRAHYDROPYRIDINE DERIVATIVE USEFUL FOR INHIBITING BLOOD PLATELET AGGREGATION

Malcolm Johnson, Wilmslow; Stuart D. Mills, Macclesfield, and Paul J. Phillips, Congleton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Apr. 2, 1979, Ser. No. 26,224

Claims priority, application United Kingdom, Apr. 12, 1978, 14322/78

Int. Cl.[3] **A61K** *31/44*

U.S. Cl. 424—263 **1 Claim**

1. A method for inhibiting the aggregation of blood platelets in a warm-blooded animal requiring such treatment, which comprises administering to said animal an effective amount of 1-(2-chlorobenzyl)-1,2,3,6-tetrahydropyridine, or a pharmaceutically acceptable acid-addition salt thereof.

4,225,603

2,2'-(SULFINYLBIS(NITROMETHYLIDYNE))BIS(TETRAHYDRO-2H-1,3-THIAZINE)

Charles H. Tieman, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 9, 1979, Ser. No. 65,248

Int. Cl.[2] **C07D** *279/04;* **A01N** *9/14*

U.S. Cl. 424—246 **3 Claims**

1. 2,2'-(Sulfinylbis(nitromethylidyne))bis(tetrahydro-2H-1,3-thiazine).

3. A method for protecting plants from attack by corn earworm larvae which comprises applying to the plants to be protected an effective dosage of the compound of claim **1.**

4,225,604

2-FORMYLQUINOXALINE-1,4-DIOXIDE CYANOACETYLHYDRAZONE AND METHODS FOR PREPARATION THEREOF

Jaromír Hebký; Vladimír Lupínek; Milan Sova, all of Prague; Bohumil Ševčík, and Jiří Brož, both of Jílové u Prahy, all of Czechoslovakia, assignors to SPOFA, spojene podniky prop farmaceutickou vyrobu, Praha, Czechoslovakia

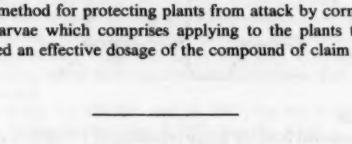
Filed Aug. 2, 1978, Ser. No. 930,067

Claims priority, application Czechoslovakia, Aug. 2, 1977, 5118/77

Int. Cl.[3] **C07D** *241/52;* **A67K** *31/495*

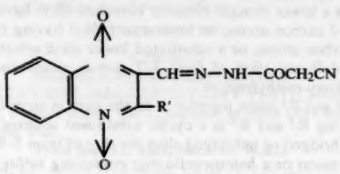
U.S. Cl. 424—250 **4 Claims**

1. 2-Formylquinoxaline-1,4-dioxide cyanoacetylhydrazone of the formula



wherein R' is selected from the group consisting of hydrogen and an alkyl group of 1–4 carbon atoms.

4. An anticoccidal and growth stimulating composition consisting essentially of an effective amount of a compound of the formula



and a carrier suitable for veterinary purposes, R^1 being selected from the group consisting of hydrogen and an alkyl group of 1–4 carbon atoms.

4,225,605

ERGOLENE OR ERGOLINE COMPOUNDS FOR TREATING CONGESTIVE HEART FAILURE

Alain Audibert, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,349

Claims priority, application United Kingdom, Dec. 22, 1977, 53456/77

Int. Cl.[2] **A61K** *31/48, 31/495*

U.S. Cl. 424—250 **13 Claims**

1. A method for the treatment of congestive heart failure in mammals which comprises administering a therapeutically effective amount of an ergolene or ergoline having dopaminergic stimulant activity to an animal in need of such treatment.

4,225,606

N-ARYL-N-(1-L-4-PIPERIDINYL)ARYLACETAMIDES

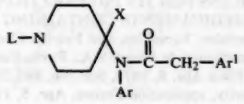
Stefan Sanczuk, Vosselaar, and Hubert K. F. Hermans, Gierle, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 795,669, May 11, 1977, Pat. No. 4,126,689, which is a continuation-in-part of Ser. No. 713,756, Aug. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 615,131, Sep. 23, 1975, abandoned. This application Jul. 13, 1978, Ser. No. 924,486

Int. Cl.[3] **C07D** *239/04*

U.S. Cl. 424—251 **12 Claims**

1. A chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

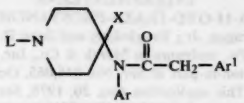
L is alky having from 1 to 10 carbon atoms;

Ar is a member selected from the group consisting pyridinyl and 2-pyrimidinyl;

Ar^1 is a member selected from the group consisting of phenyl, mono and di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and

X is a member selected from the group consisting of hydrogen, lower alkyloxycarbonyl and lower alkyloxymethyl.

7. A method of treating cardiac arrhythmia which comprises the systemic administration to warm-blooded animals of an effective anti-arrhythmic amount of a chemical compound selected from the group consisting of an N-aryl-N-(4-piperidinyl)arylacetamide having the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein:

L is alkyl having from 1 to 10 carbon atoms;

Ar is a member selected from the group consisting of pyridinyl and 2-pyrimidinyl;

Ar^1 is a member selected from the group consisting of phenyl, monoand di-substituted phenyl, wherein each substituent in said mono- and di-substituted phenyl is independently selected from the group consisting of halo, lower alkyl, hydroxy and lower alkyloxy; and

X is a member selected from the group consisting of hydrogen, lower alkyloxycarbonyl and lower alkyloxymethyl.

4,225,607

PHARMACEUTICAL COMPOSITION CONTAINING A XANTHINE DERIVATIVE

Joachim E. Goring, and Peter P. Ochlich, both of Gronau, Fed. Rep. of Germany, assignors to Johann A. Wulfing, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,564

Int. Cl.[2] **A61K** *31/52*

U.S. Cl. 424—253 **8 Claims**

1. A method of treating peripheral vascular disease in humans which comprises administering to a human in need thereof a therapeutically effective amount of 1,3-di-n-butyl-7-(2-oxopropyl)-xanthine in combination with a pharmaceutically acceptable carrier.

4,225,608

PHENOXY HETEROCYCLIC AMINES AND USE THEREOF

Jürgen Uhl; Dieter Marx; Hans-Heinrich Hausberg; Wighard Strehlow; Klaus-Otto Minck; Helmut Müller-Calgan, and Christoph Seyfried, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Mar. 16, 1979, Ser. No. 21,277

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811952

Int. Cl.[3] **C07D** *211/22, 207/08;* **A61K** *31/40, 31/445*

U.S. Cl. 424—267 **6 Claims**

1. A phenoxyalkylamine of the formula

Ar—O—R

wherein Ar is phenyl or phenyl which is monosubstituted or disubstituted by F, Cl, Br, alkyl or alkoxy each of 1–4 carbon atoms, cycloalkoxy of 3–6 carbon atoms, CF_3, CN, alkylthio of 1–4 carbon atoms, SCF_3, OH and/or alkanoyloxy with 1–10 carbon atoms; R is (1-R^1-2-pyrrolidyl)—CH_2—CHR^2, (1-R^1-2-piperidyl)—CH_2—CHR^2— or 1-R^1-3-Z-4-hexahydroazepinyl; R^1 is H, alkyl or alkenyl each of up to 4 carbon atoms, cyclopropylmethyl or benzyl; R^2 is H, alkyl of 1–4 carbon atoms or phenyl; and Z is alkyl of 1–4 carbon atoms with the proviso that Ar is p-fluorophenyl only if R is not 2-(1-methyl-2-piperidyl)-ethyl;

and the physiologically acceptable acid addition salts thereof.

5. A pharmaceutical composition comprising an antidepressantly effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,225,609

INTERPHENYLENE 9-THIA-11-OXO-12-AZA-PROSTANOIC ACIDS

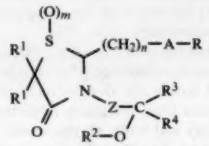
Edward J. Cragoe, Jr.; Ta-jyh Lee, and John B. Bicking, all of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 846,065, Oct. 27, 1977, abandoned. This application Aug. 30, 1978, Ser. No. 938,129

Int. Cl.[2] **C07D** *277/04*

U.S. Cl. 424—270 **65 Claims**

1. A compound of the formula:



wherein

R is carboxy, a carboxy salt, a carboxy ester of the formula $COOR^5$ wherein R^5 is C_{1-10} alkyl, or $CONHR^6$ wherein R^6 is amino or methylsulfonyl;

A is a p-phenylene or a m-phenylene or substituted phenylene derivative in which one or two of the phenylene hydrogens is replaced by a methyl or a halo substituent, or 2,5-thienylene or 2,5-furylene;

n is 3 or 4;

m is 0, 1, or 2;

R^1 is hydrogen, deuterium, or methyl;

Z is alkylene or unsaturated alkylene having from 2–3 carbon atoms;

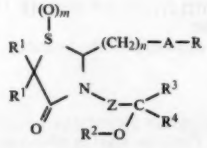
R^2 is hydrogen or lower alkanoyl;

R^3 is hydrogen or straight chain C_{1-3} alkyl; and

R^4 is lower straight chain or branched alkyl having from 3–7 carbon atoms, an unsaturated alkyl having from 3–7 carbon atoms, or a substituted lower alkyl selected from polyfluoro alkyl of from 3–7 carbon atoms and lower alkoxy methylene; or

R^3 and R^4 taken together with the carbon atom connecting R^3 and R^4 is a cyclic substituent selected from a bridged or unbridged alicyclic ring of from 5–9 carbon atoms or a heterocyclic ring containing sulfur or oxygen and from 5–7 ring-forming carbon atoms.

64. A pharmaceutical composition for improving renal function in patients with renal impairment comprising an aqueous, oily, or enteric-coated pharmaceutical carrier and an effective renal vasodilator amount of a compound of the formula:



wherein

R is carboxy, a carboxy salt, a carboxy ester of the formula $COOR^5$ wherein R^5 is C_{1-10} alkyl, or $CONHR^6$ wherein R^6 is amino or methylsulfonyl;

A is a p-phenylene or a m-phenylene or substituted phenylene derivative in which one or two of the phenylene hydrogens is replaced by a methyl or a halo substituent, or 2,5-thienyl or 2,5-furylene;

n is 3 or 4;

m is 0, 1, or 2;

R^1 is hydrogen, deuterium, or methyl;

Z is alkylene or unsaturated alkylene having from 2–3 carbon atoms;

R^2 is hydrogen or lower alkanoyl;

R^3 is hydrogen or straight chain C_{1-3} alkyl; and

R^4 is a lower straight chain or branched alkyl having from 3–7 carbon atoms, an unsaturated alkyl having from 3–7 carbon atoms, or a substituted lower alkyl selected from polyfluoro alkyl of from 3–7 carbon atoms and lower alkoxy methylene; or

R^3 and R^4 taken together with the carbon atom connecting R^3 and R^4 is a cyclic substituent selected from a bridged or unbridged alicyclic ring of from 5–9 carbon atoms or a heterocyclic ring containing sulfur or oxygen and from 5–7 ring-forming carbon atoms.

4,225,610

IMMUNOACTIVATORS DERIVED FROM AMINO THIAZOLES

Jean-Pierre Tarayre, Valdurenque; Henri Cousse, Chemin de Lastino; Gilbert Mouzin; Henri Lauressergues, both of Castres, Tarn, all of France, and Silvano Casadio, Milan, Italy, assignors to Pierre Fabre, S.A., France

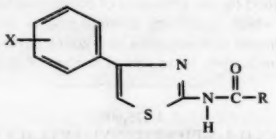
Filed Oct. 19, 1978, Ser. No. 952,739

Claims priority, application France, Oct. 19, 1977, 77 31687

Int. Cl.[2] **C07D** *277/20*

U.S. Cl. 424—270 **13 Claims**

1. 4-phenyl-2-amino thiazoles having the formula:



in which:

X represents a hydrogen atom, a halogen, a lower alkyl, or an alkoxy,

R represents $—O—C—(Cl)_3$; $—O—CH_2—C(Cl)_3$; $—O—CH_2—CH_2—CH_2—Br$; $—O—CH_2—CHBr_2$; or carboxyalkyl.

3. A pharmaceutical composition, useful in immunotherapy, containing an effective immune response elevating amount of a compound of claim **1**, together with a pharmaceutically acceptable carrier.

4,225,611

NOVEL N-SUBSTITUTED BENZENESULFONAMIDE, PROCESS FOR ITS PREPARATION AND MEDICAMENTS CONTAINING IT

Jean-Paul Fournier, Versailles, and Patrick Choay, Paris, both of France, assignors to Choay S.A., Paris, France

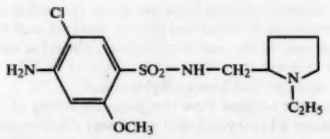
Filed Apr. 5, 1978, Ser. No. 893,250

Claims priority, application France, Apr. 5, 1977, 77 10322

Int. Cl.[2] **A61K** *31/40*; **C07D** *207/08*

U.S. Cl. 424—274 **10 Claims**

1. A compound 4-amino-5-chloro-2-methoxy-N(N'-ethyl 2-methylpyrrolidino) benzenesulfonamide of the following formula (I)



(I)

and its additional salts with physiologically acceptable mineral or organic acids.

2. A medicament comprising an effective amount of the compound of formula (I) or one or its salts according to claim

1, associated with pharmaceutically acceptable excipients or adjuvants to facilitate its administration.

4,225,612

HETEROCYCLIC-SUBSTITUTED CYCLOPROPANECARBOXYLATE PESTICIDES

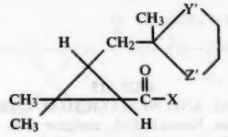
James E. Powell, Ripon, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 17, 1979, Ser. No. 76,022

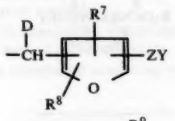
Int. Cl.[3] **A01N** *9/12, 9/28;* **C07D** *317/30, 339/06*

U.S. Cl. 424—274 **8 Claims**

1. A cyclopropane compound having the formula

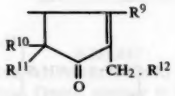


wherein Y' and Z' each independently is an oxygen atom or a sulfur atom and X is chlorine, bromine or OR in which R represents a hydrogen atom, a salt-forming cation, an alkyl group containing from 1 to 20 carbon atoms or a group of the formulas I–IX



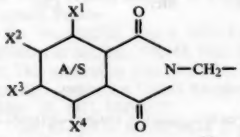
I

or



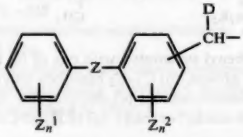
II

or



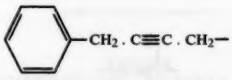
III

or



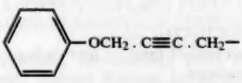
IV

or



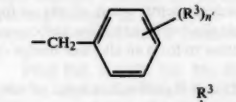
V

or



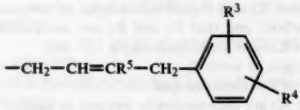
VI

or



VII

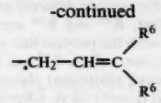
or



VIII

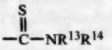
-continued

or

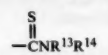


IX

wherein Y represents hydrogen or an alkyl, alkenyl or alkynyl group or an aryl or furyl group which is unsubstituted or substituted in the ring by one or more alkyl, alkenyl, alkoxy or halogeno groups, R^7 and R^8, which may be the same or different, each represent hydrogen or an alkyl or alkenyl group, R^9 represents hydrogen or a methyl group, R^{10} and R^{11} represent hydrogen or an alkyl group, R^{12} represents an organic radical having carbon-carbon unsaturation in a position α to the CH_2 group to which R^{12} is attached, A/S indicates an aromatic ring or a dihydro or tetrahydro analogue thereof, X^1, X^2, X^3 and X^4, which may be the same or different, each represents hydrogen, halogen or a methyl group, D represents H, —CN, —C≡CH or



in which R^{13} and R^{14} may be the same or different, each represent a hydrogen atom or an alkyl group containing from 1 to 10 carbon atoms, Z represents $—CH_2—$, —O—, —CO— or —S—, Z^1 and Z^2, which may be the same or different, each represent halogen or an alkyl group containing 1 to 4 carbon atoms and n is 0, 1 or 2, R^3 and R^4 each independently is a hydrogen atom, a halogen atom having an atomic number of from 9 to 35, inclusive, an alkyl group containing from 1 to 4 carbon atoms or a nitro group, R^5 is ahydrogen atom or a halogen atom having an atomic number of from 9 to 35, inclusive, each R^6 is independently a halogen atom having an atomic number of from 9 to 35, inclusive; and n' is an integer of from 1 to 5 with the proviso that when D is —CN, —C≡CH or



then the alcohol moiety is in the R,S-racemic or in the S-optical configuration.

7. A method of controlling pests at a locus which comprises applying to the pests or to the locus a pesticidally effective amount of a cyclopropane carboxylate according to claim 1 wherein X is OR in which R is a group selected from formulas I through IX, inclusive.

4,225,613

1H-PYRROLE-1-ACETAMIDE COMPOUNDS AND THEIR PHARMACEUTICAL COMPOSITIONS

Terence J. Ward, Slough, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

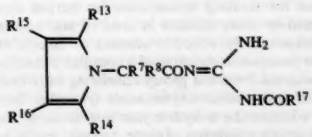
Filed Apr. 30, 1979, Ser. No. 35,026

Claims priority, application United Kingdom, May 20, 1978, 20986/78

Int. Cl.[2] **A61K** *31/40;* **C07D** *207/30*

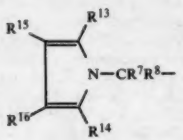
U.S. Cl. 424—274 **8 Claims**

1. A pyrrole or the formula



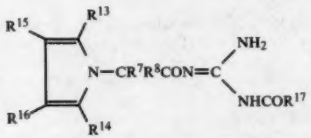
[(II)]

wherein R^7 and R^8 are the same or different and each represent hydrogen or lower alkyl, R^{13} and R^{14} are each hydrogen, lower alkyl or halogen with the proviso that at least one of R^{13} and R^{14} is halogen or (lower) alkyl, R^{15} and R^{16} is halogen or (lower) alkyl, R^{17} is phenyl, substituted phenyl, phenyl (lower) alkyl, substituted phenyl (lower) alkyl, wherein the substituted phenyl radical is phenyl substituted by one or more unhindered substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen and trifluoromethyl substituents; or a radical of the formula



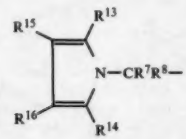
where R^7, R^8, R^{13}, R^{14}, R^{15} and R^{16} have the meanings above.

8. A pharmaceutical composition having hypotensive or antihypertensive activity comprising a pyrrole of the formula



[(II)]

wherein R^7 and R^8 are the same or different and each represent hydrogen or lower alkyl, R^{13} and R^{14} are each hydrogen, lower alkyl or halogen with the proviso that at least one R^{13} and R^{14} is halogen or alkyl, R^{15} and R^{16} are each hydrogen or lower alkyl and R^{17} is phenyl, substituted phenyl, phenyl (lower) alkyl, substituted phenyl (lower) alkyl, wherein the substituted phenyl radical is phenyl substituted by one or more lower alkyl, lower alkoxy, halogen or trifluoromethyl substituents; or a radical of the formula



wherein R^7, R^8, R^{13}, R^{14}, R^{15}, and R^{16} have the meanings above in association with a pharmaceutically acceptable carrier.

4,225,614

METHOD OF TREATMENT FOR MUCOCUTANEOUS HERPES SIMPLEX INFECTIONS

Anders E. Hansson, Staffanstorp, Sweden, assignor to Aktiebolaget Draco, Lund, Sweden

Filed Dec. 14, 1978, Ser. No. 969,366
Claims priority, application Sweden, Dec. 21, 1977, 7714578
Int. Cl.[2] A61K *31/315, 33/30*
U.S. Cl. 424—289 **2 Claims**

1. A method for treating mucocutaneous herpes simplex infections in man or other animals in need of said treatment, wherein a therapeutically effective amount of zinc is orally administered as an aqueous solution of a complex consisting of a compound selected from the group consisting of α-hydroxycarboxylic and α-aminocarboxylic acids (complex former) and zinc, and wherein the α-hydroxycarboxylic acids are selected from the group consisting of citric, tartaric, malic, lactic and glycolic acids and the α-aminocarboxylic acids are selected from the group consisting of amino acetic acid, aspartic acid, aspargine, glutamic acid glutamine and ethylene diamine tetraacetic acid, the relation between the zinc and said complex former being equimolecular and wherein the pH of said solution is between about 3 to 9.

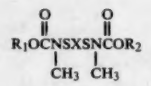
4,225,615

INSECTICIDAL AND NEMATICIDAL CARBAMATES

Gary D. Grantham, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

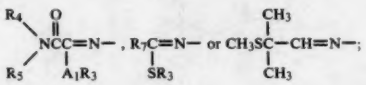
Filed Apr. 24, 1978, Ser. No. 899,298
Int. Cl.[3] A01N *37/18;* **C07C** *119/18*
U.S. Cl. 424—298 **27 Claims**

1. A compound of the formula:

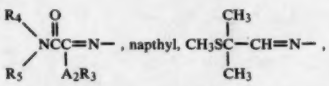


wherein

R_1 is



R_2 is



phenyl, or phenyl substituted with one of (a) to (g),

(a) 1–3 methyl groups, (b) C_3–C_5 branched alkyl, (c) methylthio, (d) dimethylamino, (e) diallylamino, (f) R_9SCH_2 wherein R_9 is methyl or ethyl, (g) $(CH_3)_2NCH{=}N$;

X is

or $CH_2CH_2A_3CH_2CH_2$;

R_3 is alkenyl, alkynyl of three or four carbons, or alkyl of one to four carbons;

R_4 and R_5 are independently alkyl of one to four carbons, CH_3O, or cycloalkyl of three to five carbons or R_4 and R_5 are taken together to form an alkylene bridge of four to six carbons;

provided that R_4 and R_5 contain a total of not more than seven carbons and that R_4 and R_5 are not both simultaneously OCH_3 or both cycloalkyl;

R_6 is hydrogen or methyl;

R_7 is alkyl of 1–4 carbons; and

A_1, A_2 and A_3 are independently oxygen or sulfur.

4,225,616
TETRAHALOETHYLCYCLOPROPANE-CARBOXYLIC ACID ESTERS

Peter Ackermann, Reinach; Jozef Drabek, Oberwil; Saleem Farooq, Ettingen; Laurenz Gsell, Basel; Odd Kristiansen, Mohlin, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

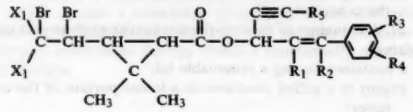
Filed Jun. 21, 1979, Ser. No. 50,562

Claims priority, application Switzerland, Jun. 26, 1978, 6936/78; May 21, 1979, 4741/79

Int. Cl.[3] C07C *69/74;* A01N *53/00*

U.S. Cl. 424—305 10 Claims

1. A cyclopropanecarboxylic acid ester of the formula



in which

X_1 is fluorine, chlorine or bromine,

R_1 and R_2 are each hydrogen, fluorine, chlorine, bromine or methyl,

R_3 and R_4 are each hydrogen, fluorine, chlorine, bromine, methyl, methoxy, nitro or dimethylamime, or together as methylenedioxy, and

R_5 is hydrogen or methyl.

8. A method for controlling insects and acarids which comprises applying thereto an insecticidally or acaricidally effective amount of a compound according to claim 1.

4,225,617
ACETOHYDROXAMIC ACIDS

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Division of Ser. No. 930,925, Aug. 4, 1978, Pat. No. 4,183,951, which is a division of Ser. No. 778,543, Mar. 17, 1977, Pat. No. 4,122,186. This application Aug. 24, 1979, Ser. No. 69,254

Claims priority, application United Kingdom, Mar. 23, 1976, 11710/76; Mar. 15, 1977, 06298/77

Int. Cl.[2] C07C *83/10;* A61K *31/185*

U.S. Cl. 424—315 2 Claims

1. (3,4-dichloroanilino)-acetohydroxamic acid and its non-toxic metal salts.

2. A pharmaceutical composition, comprising, in association with a pharmaceutically acceptable excipient, at least one compound according to claim 1.

4,225,618
COMBATING PLANT PESTS WITH N-(ω-CHLORO-ALKANOYL)-N'-TRIFLUOROMETHYL-PHENYL-UREAS

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Odenthal-Hahnenberg; Wilhelm Brandes, Leichlingen, and Peter Roessler, Bensberg-Refrath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

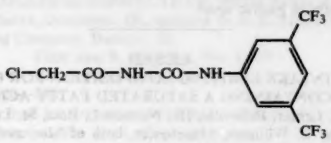
Filed Feb. 8, 1979, Ser. No. 10,289

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806213

Int. Cl.[3] A01N *47/28;* C07C *127/00*

U.S. Cl. 424—322 3 Claims

1. N-(3,5-Bis-trifluoromethylphenyl)-N'-(chloroacetyl)-urea of the formula



2. An arthropodicidal or fungicidal composition containing as active ingredient an arthropodicidally or fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,225,619
SUBSTITUTED FLUORACYLRESORCINOLS

Rolf Brickl; Hans Eberhardt; Karl-Richard Appel, all of Biberach; Uwe Lechner, Ummendorf, and Walter Merk, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmBH, Ingelheim am Rhein, Fed. Rep. of Germany

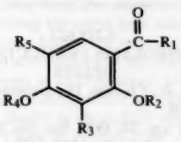
Continuation of Ser. No. 786,265, Apr. 11, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,777

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616479

Int. Cl.[3] A01N *35/04;* C07C *49/82*

U.S. Cl. 424—331 16 Claims

1. A compound of the formula



wherein

R_1 is perfluoralkyl of 1 to 8 carbon atoms,

R_2 and R_4 are each hydrogen or alkyl of 1 to 10 carbon atoms,

R_3 is methyl, alkyl of 3 to 18 carbon atoms, halogen, nitro, methylthio, hydroxyl or methoxy,

R_5 is methyl, alkyl of 3 to 18 carbon atoms, halogen, nitro or methylthio, or

one of the substituents R_3 and R_5 is hydrogen or ethyl when the other has the meanings defined above except hydrogen, or when R_1 has the meanings defined above except trifluoromethyl, or when R_2 and R_4 have the meanings defined above except hydrogen or methyl.

12. An antibacterial and antifungal pharmaceutical composition consisting essentially of an inert carrier and from 0.05 to 1% by weight, based on the total weight, of a compound of claim 1.

4,225,620
METHOD FOR FEEDING RUMINANT ANIMALS

Robert M. Rawlings, and Donald Procter, both of Boise, Id., assignors to Blue Wing Corporation, Ada County, Id.

Continuation-in-part of Ser. No. 665,006, Mar. 8, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 828,152

Int. Cl.[2] A23K *1/04*

U.S. Cl. 426—2 15 Claims

1. A process of feeding ruminant animals a nutritionally effective amount of a feed supplement consisting essentially of:

feeding said ruminant animals a composite feed supplement containing protein material treated by a process consisting of alkali solubilizing said protein material in an aqueous medium having a pH from about 9 to about 13.5 and drying said aqueous material to a particulate gel composition said treated protein material resisting biodegradation in the rumen but readily assimilable within the post rumen

gut whereby meat, fat and milk production are promoted without gastric upset.

4,225,621

FEED INTAKE LIMITING COMPOSITION FOR CATTLE CONTAINING A SATURATED FATTY ACID

Kent J. Lanter, Belleville, Ill.; Norman L. Betz, St. Louis, and Danny L. Williams, Manchester, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 9, 1977, Ser. No. 849,742
Int. Cl.[2] A23K *1/00*
U.S. Cl. 426—2 **19 Claims**

1. A feed intake limiting composition for cattle to control consumption of a feed supplement when added thereto comprising at least one member of a group of compounds, including mixtures of these compounds, at a level in said supplement, of at least about 1% by weight having the formula:

wherein R is a C_9 to a C_{13} saturated aliphatic, R^1 is selected from the group consisting of a hydrogen, a C_1 to C_3 alkyl, potassium and sodium together with a material selected from the group consisting of meat meal, ammonium sulfate, diammonium phosphate, and combinations thereof.

4,225,622

PROTEIN HYDROLYSIS PRODUCTS FROM LIMED SPLITS

Michael S. Banik, Jr., Chicago, Ill., assignor to Inolex Corporation, Chicago, Ill.

Filed Apr. 24, 1978, Ser. No. 899,291
Int. Cl.[2] A23J *1/10*
U.S. Cl. 426—32 **2 Claims**

1. A method for preparing hydrolyzed proteins comprising charging water, molecular sulfur dioxide, and tannery limed splits into a cook tank, the sulfur dioxide comprising from about 0.5% to about 5% of the weight of the charged water, continuously charging live steam to said cook tank for a period from about 1½ to about 3 hours and until said limed splits are converted to a steam hydrolysis product having a Formol Nitrogen value from about 6% to about 9%, while venting said cook tank under throttle to maintain a superatmospheric pressure and an elevated temperature therein, the superatmospheric pressure being between about 40 and about 50 pounds per square inch gauge, and thereafter venting and cooling said charge mixture.

4,225,623

PREPARATION OF FRUIT-ON-THE-TOP SUNDAE-STYLE YOGURT

William E. Stussi, 8508 Roanoke Rd., San Gabriel, Calif. 91775

Continuation-in-part of Ser. No. 850,410, Nov. 10, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,596
Int. Cl.[3] A23C *9/133*
U.S. Cl. 426—42 **29 Claims**

1. A process for filling containers with fruit-on-the-top sundae-style yogurt comprising the steps of:

providing a container having a removable lid which closes one end of the container and having an opening at an opposite end of the container for providing access to the interior of the container, the container being inverted so the lid is positioned at the bottom of the container and the opening is foremost;

introducing a fruit fraction through the opening and into the interior of the inverted container to form a fruit fraction layer supported on the inside surface of the lid;

introducing a bacteriologically inoculated liquid milk fraction through the opening of the inverted container into the interior of the container above the fruit fraction layer;

sealing the opening of the container;

incubating and subsequently refrigerating the contents of the sealed inverted container so that fermentation of the milk fraction produces yogurt having sufficient gel strength that, upon subsequently positioning the container in an upright position with the lid foremost, the yogurt in the bottom of the container self-supports the first fraction layer about it; and positioning the container in an upright position with the lid foremost after the refrigerating step to provide a container of fruit-on-the-top sundae-style yogurt wherein the yogurt self-supports a top fruit fraction layer that is immediately beneath the removable lid of the container;

27. A container of fruit-on-the-top sundae-style yogurt comprising:

a container having a removable lid;

yogurt in a gelled condition in a lower portion of the container;

a fruit fraction layer in the upper portion of the container immediately inside the removable lid and overlying the yogurt, the fruit fraction having a higher specific gravity than the yogurt, the yogurt having sufficient gel strength to support the fruit fraction layer; and

an edible barrier film at the interface between the yogurt and the fruit fraction for inhibiting intermingling of the fruit fraction and the yogurt at the interface, the edible barrier being selected from the group consisting of hydrogenated animal fats and hydrogenated vegetable oils.

4,225,624

PROCESS FOR REDUCING CALORIC CONTENT OF COCONUT

Norman D. Kosarin, 60 E. End Ave., New York, N.Y. 10028, and Gilbert Finkel, 6 Jagged Rock Rd., Parsippany, N.J. 07054

Continuation-in-part of Ser. No. 882,229, Feb. 28, 1978, abandoned, which is a continuation of Ser. No. 707,659, Jul. 22, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,608
Int. Cl.[3] A23G *3/00*
U.S. Cl. 426—93 **5 Claims**

1. A process for producing a food product having a reduced caloric content, comprising the steps of:

providing a first quantity of coconut;

providing a second quantity of solvent;

mixing said first quantity of coconut and said second quantity of solvent;

heating said mixture at a temperature up to approximately 82° C. in a standard atmospheric condition for 8 hours to cause said solvent to dissolve substantially all the fat in said coconut while retaining flavor; and

separating said defatted coconut from said solvent;

and further including the additional steps of mixing a predetermined amount of said defatted coconut with predetermined amounts of edible materials including invert syrup, a thickening agent, and water;

cooking said mixture until excess water is evaporated;

cooling said cooked mixture; and

coating said cooled cooked mixture with sweetened chocolate to form a candy of approximately 25% by weight sweetened chocolate and having a caloric content of less than 100 calories/ounce (353 calories/100 grams).

4,225,625

SEPARATING CITRUS PEEL INTO ALBEDO AND FLAVEDO COMPONENTS

Gordon P. Gerow, Davenport, Fla., assignor to FMC Corporation, San Jose, Calif.

Filed Oct. 23, 1978, Ser. No. 953,513
Int. Cl.[2] A23L *1/212*
U.S. Cl. 426—482 10 Claims

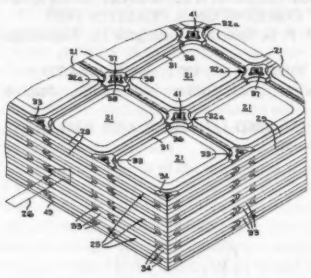
1. A method for separating a substantially pure albedo fraction from a quantity of citrus peel, having albedo and flavedo portions intact, comprising the steps of: comminuting the quantity of citrus peel exclusive of other parts of the whole citrus fruit into a mass of particulate peel material to the extent that the substantially pure albedo fraction of the material is finely divided relative to larger particles of the particulate peel material which contain a substantial proportion of flavedo; and separating the finely divided material from the mass of comminuted peel material to thereby obtain a substantially pure albedo fraction.

4,225,626

METHOD FOR SUPPORTING AND UNIFORMLY HEAT PROCESSING A LAYERED ARRAY OF STEAM TABLE TRAYS

Tony T. Chiu, Los Gatos; Bruce M. Wright, San Jose; Jurgen H. Strasser, Mountain View, and Bruce M. Harper, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 16, 1978, Ser. No. 951,549
Int. Cl.[2] A23L *3/10, 3/12*
U.S. Cl. 426—520 2 Claims



1. A method of supporting and processing a layered array of four cornered steam table trays containing foodstuffs on a plurality of interlayer spacer grids having a plurality of tray corner support pads attached thereto within a tray carrying car having a bottom support floor and being configured for placement within a cooking retort, the trays having laterally extending support flanges with seals located at the edges thereof, said flanges having a predetermined allowable compression dimension without damage being imparted to the seals, said method comprising the steps of supporting a lower layer of trays with a support pad at each corner of each tray in a predetermined pattern so that the trays are spaced from adjacent trays and from the bottom support floor of the carrying car, spacing a plurality of steam table trays with the spacer grids and the tray corner support pads in successive overlying layers in the carrying car in substantially the same pattern as the lower layer, limiting the vertical force and therefore the compression imposed on said support flanges in underlying layers of trays by the weight of trays in overlying layers by allowing overlying support pads to contact underlying support pads so that the predetermined allowable compression dimension is not exceeded and seal security of the trays maintained, and the foodstuffs are substantially uniformly heat processed by passing heated fluid through the spaces between horizontally and vertically adjacent trays.

4,225,627

DEMOLDING CONFECTIONS WITH STEAM

Carl O. Moore, Rochester, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Jan. 8, 1979, Ser. No. 1,627
Int. Cl.[3] A23G *3/00;* A23L *1/236*
U.S. Cl. 426—548 14 Claims

1. A method for preparing a molded confectionery product which comprises the steps of: (a) preparing a fluid mass of confectionery ingredients containing high-amylose starch as a congealing agent; (b) depositing the fluid mass in a solid mold; (c) gelling the fluid mass within the mold to provide a molded confectionery product; and (d) expelling the gelled confectionery product from the mold with steam pressure.

4,225,628

CITRUS FIBER ADDITIVE PRODUCT AND PROCESS FOR MAKING SAME

Charles C. Lynn, Babson Park, Fla., assignor to Ben Hill Griffin, Inc., Frostproof, Fla.

Continuation-in-part of Ser. No. 866,840, Jan. 4, 1978, abandoned. This application Apr. 30, 1979, Ser. No. 34,642
Int. Cl.[3] A21D *2/36;* A23L *1/313, 1/32*
U.S. Cl. 426—549 17 Claims

1. The process of preparing an edible additive for food from citrus fruit waste comprising the peel, membrane, and pulp of citrus fruits, which process comprises the steps of:

A. washing the citrus fruit;

B. removing oil from the whole citrus fruit;

C. extracting the juice from the citrus fruit, the remaining substance comprising the citrus fruit waste;

D. chopping the citrus fruit waste into communited chunks;

E. neutralizing the acid content of the communited chunks of citrus fruit waste to a pH of about 5.5–7.0;

F. pressing out and removing water and soluble solids from the neutralized chunks of citrus fruit waste;

G. adding about 1 part of protein flour, containing about 50% protein, per 50 parts of pressed citrus waste;

H. grinding such mixture until the fruit waste has a small uniform particle size of about 0.25 inch;

I. drying the mixture to less than about 7% moisture at a mean temperature of less than about 280° F., into a light tan colored material; and

J. milling said light tan colored material into flour consistency.

4,225,629

PREPARATION OF PROTEIN CONCENTRATES FROM WHEY AND SEED PRODUCTS

Robert M. Saunders, and George O. Kohler, both of El Cerrito, Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation of Ser. No. 695,616, Jun. 14, 1976. This application Aug. 15, 1977, Ser. No. 824,777
Int. Cl.[3] A23J *1/12, 1/14, 1/20*
U.S. Cl. 426—583 4 Claims

1. A process for preparing a protein concentrate from whey and a protein-containing seed product, said concentrate being useful as a human food supplement, which consists of

(a) mixing the whey and the protein-containing seed product,

(b) applying an alkalizer to the mixture to adjust to a pH of about 9–10,

(c) separating a juice containing soluble proteins therefrom,

(d) acidifying the juice to a pH of about 3–4,

(e) adding sodium hexametaphosphate to the juice as the sole protein-precipitating agent in an amount of about 3 to 10 grams per liter of acidified juice,

(f) separating the solid protein concentrate from the juice, and

(g) washing the solid protein concentrate with water and drying it.

4,225,630

FOOD EXTRUSION PROCESS

Esra Pitchon, Flushing, N.Y., assignor to General Foods Company, White Plains, N.Y.

Filed May 24, 1978, Ser. No. 909,075
Int. Cl.[2] C23K 1/00
U.S. Cl. 426—623 7 Claims

1. In a process for preparing an expanded, farinaceous food by moistening, heating and mechanically working a farinaceous mixture, comprising 35–70% farinaceous ingredients and 20–50% protein ingredients sufficiently to raise the temperature to substantially above 100° C., raise the pressure in excess of ambient, and to gelatinize starch granules; and thereafter extruding the farinaceous mixture containing gelatinized starch through a die into a zone maintained at a pressure sufficiently below that of the heated and worked mixture to cause expansion and partial drying of the mixture, the improvement which comprises: injecting at least 2% fat into the farinaceous mixture at a point after substantial gelatinization of the starch but prior to extrusion through the die which permits the fat to become intimately mixed with the food.

4,225,631

ABRASION RESISTANT COATINGS FOR UNSATURATED POLYMERIC SUBSTRATES

Michael J. Berger, Cambridge, and Hollis E. French, N. Chelmsford, both of Mass., assignors to Itek Corporation, Lexington, Mass.

Filed Apr. 19, 1976, Ser. No. 678,089
Int. Cl.[2] B05D 3/06
U.S. Cl. 427—54.1 18 Claims

1. A process for forming an abrasion-resistant, adherent coating on a polymeric substrate formed from monomers which contain unsaturated groups, comprising:

a. forming a solution of hydrolyzed vinyltri(lower alkoxy)silane in a water-miscible, volatile, organic solvent wherein said vinyltri(lower alkoxy)silane is present from about 25 to about 75 weight percent;

b. applying a coating of said solution to a clean surface of the polymeric substrate;

c. dehydrating the coated substrate at an elevated temperature; and,

d. subsequently subjecting the dehydrated coated substrate to high energy radiation until an adherent, coating having significantly improved abrasion-resistance is formed thereon.

4,225,632

FABRICATION OF CAPACITIVE TRANSDUCERS

Roland K. Ho, McHenry, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

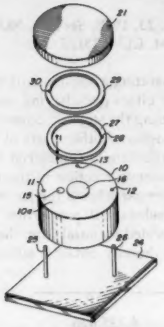
Filed Nov. 11, 1977, Ser. No. 850,759
Int. Cl.[3] B05D 1/32; H01G 7/00
U.S. Cl. 427—79 10 Claims

1. A method for depositing a uniform screen printed thick layer of material on a substrate, comprising the steps of:

depositing a first layer of a material onto a substrate by using a pattern bearing mask wherein said pattern is an annular ring and through which said first layer of material passes,

then altering the relative rotational orientation between the mask pattern and the substrate by a predetermined number of degrees, and

subsequently depositing a second layer of said material onto said first layer by utilizing said pattern bearing mask, through which said second layer of material passes, whereby a thick uniform layer of said material is deposited



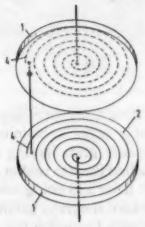
on said substrate despite imperfections and variations in any of the deposited layers.

4,225,633

METHOD OF MAKING A LINE-SHAPED OPENING IN A COATING ON A PLASTICS FOIL

Ferdinand H. F. G. Spierings, Asserpark 11, Wageningen, Netherlands

Filed Dec. 27, 1977, Ser. No. 864,729
Claims priority, application Netherlands, Jan. 6, 1977, 7700081
Int. Cl.[2] B05D 5/12; B41M 3/08; B32B 31/00
U.S. Cl. 427—96 2 Claims



1. A method of scribing a linear opening in a plastic foil having an electrically conductive coating thereon, said foil being in the form of a generally circular disc, said coating being formed along a peripheral region of said disc and from a silver suspension in a volatile solvent disposed on said peripheral region of said disc with said solvent evaporated to leave a silver deposit, comprising

heating a first pointed part in the range of the melting temperature of said foil;

exerting pressure on and moving said part along a circular path and in contact with said coating so that said part passes entirely through said coating and partially through said foil to form two, electrically isolated regions; and

connecting separate discharge means to said electrically isolated regions at reversible electrodes formed by electrochemical surface treatment thereof with HCl to form AgCl layers thereon.

4,225,634

METHOD FOR MANUFACTURING GAS COMPOSITION DETECTOR

Kazuo Tanaka, Toyoake; Osamu Takenaka, Chiryu, and Masatosi Suzuki, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Aichi, Japan

Filed Jul. 20, 1977, Ser. No. 817,523
Claims priority, application Japan, Jul. 28, 1976, 51-90462
Int. Cl.[2] F01N 3/00; B01J 35/04
U.S. Cl. 427—101 6 Claims

1. A method for manufacturing a gas composition detector comprising a metal oxide mixture, the electrical resistance or the electromotive force of which changes with the concentration of the gas composition of gas to be examined, said method comprising the steps of:

pre-calcining said metal oxide mixture to form a preform detection element having a porous surface of sufficient porosity to permit a aqueous solution including a conductive metal component to penetrate said pre-calcined detection element;

spraying said aqueous solution including said conductive metal component on said pre-calcined element;

drying said pre-calcined detection element;

firing said detection element to cause further sintering of said element whereby said porous surface is concentrated and some particles of said conductive metal component penetrate the concentrated porous surface of said detection element while other particles remain on said surface, to cause the penetrated particles and the other particles of said conductive metal component to be strongly deposited on the porous surface; and

forming an electrode layer of the same metal as said conductive metal component on a surface of the fired detection element through said conductive metal component, the metal protrusions on the surface of the detection element from said strongly deposited conductive metal component serving as a base for the metal plating in said forming step to provide strong adhesion between the metal layers in the first and second metal deposition steps.

4,225,635

METHOD FOR APPLYING REACTED BORON OXIDE LAYER TO VITREOUS SILICA SUBSTRATE

Bulent E. Yoldas, Churchill Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

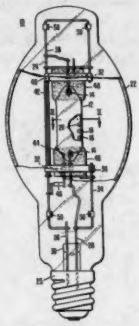
Filed Mar. 2, 1979, Ser. No. 16,765
Int. Cl.[2] B05D 3/02
U.S. Cl. 427—106 6 Claims

1. The method of applying a thin transparent layer comprising boron oxide to the surface of a vitreous silica substrate, wherein the applied layer comprising boron oxide is adhered to and reacted with the surface of said substrate, said method comprising:

a. forming a partially hydrolyzed aqueous clear solution principally comprising boron alkoxide and silicon alkoxide wherein the molar ratio of silicon alkoxide to boron alkoxide is from 0.02 to 0.25;

b. applying the formed solution to the surface of the substrate to be coated; and

c. heating the substrate and applied coating at a temperature of from about 500° C. to about 1100° C. for a sufficient time to liberate the hydroxyl and organic components from the applied solution and completely react the glass-forming residual constituents of said solution with the surface of said substrate.



4,225,636

HIGH POROSITY CARBON COATED CIGARETTE PAPERS

Warren K. Cline; Stuart W. McCarty, both of Brevard, and William F. Owens, Jr., Pisgah Forest, all of N.C., assignors to Olin Corporation, Pisgah Forest, N.C.

Division of Ser. No. 857,660, Dec. 5, 1977, abandoned. This application Mar. 8, 1979, Ser. No. 18,738
Int. Cl.[2] B05D 3/02, 5/00; A24D 1/02, 1/08
U.S. Cl. 427—243 4 Claims

1. A method for producing high porosity, high carbon content cigarette paper comprising uniformly coating at least one surface of a paper substrate having a Filtrona porosity of at least 10,000 air permeability units with an aqueous slurry containing from 10 to 50% finely divided carbon, from 0.1 to 3% of a water-soluble binder, and from 0.5 to 3% of an alkali metal carbonate, all percentages by weight based on the weight of the slurry, and drying the coated paper to obtain a finished coated paper having a Filtrona porosity of not less than 5,000 air permeability units.

4,225,637

PROCESS FOR WOOD TREATMENT

Neil G. Richardson, Montreal, Canada, assignor to Domtar Inc., Montreal, Canada

Filed Mar. 2, 1979, Ser. No. 16,913
Int. Cl.[2] B05D 3/00, 3/12, 3/04
U.S. Cl. 427—297 11 Claims

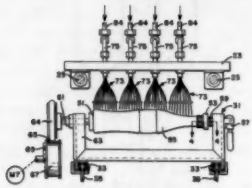
1. A process for cleaning wood material impregnated with an aqueous ammoniacal liquor containing in solution a water insoluble treating chemical, and having deposits of said treating chemical on surfaces thereof; said process comprising submerging said wood material in an aqueous ammoniacal treating solution, dissolving a significant portion of said deposits in said solution, separating said ammoniacal solution from said wood material thereby to leave said surfaces wetted with said solution, maintaining said wetted surfaces in an atmosphere containing ammonia gas until said surfaces are substantially free of said solution, and reusing said separated solution.

5. Process as defined in claim 1, or 2 where said wood material is subjected to a subatmospheric pressure following said separation of said treating solution from said wood material.

4,225,638
METHOD AND APPARATUS FOR FLOW COATING WITH SUCK-BACK CONTROL

Robert E. Waugh, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Filed Apr. 16, 1979, Ser. No. 30,201
Int. Cl.[2] B05D 3/00
U.S. Cl. 427—331 12 Claims



1. In apparatus for flow coating an article with a layer of plastic including means for moving said article past a coating station, a plurality of liquid applicator nozzle means positioned above said coating station, means for supplying predetermined quantities of uncured liquid plastic material to respective ones of said plurality of nozzle means, and means for moving said plurality of nozzle means parallel to the direction of movement of said article past said coating station, the improvement comprising: said means for supplying uncured liquid plastic material includes means for terminating the flow of uncured liquid coating material by creating a sufficient negative pressure in said plurality of nozzle means to eliminate drippage from said plurality of nozzle means but insufficient to cause air to be sucked into said plurality of nozzle means.

7. In a method of flow coating an article with a layer of plastic comprising passing an article to be coated beneath a coating station, metering a predetermined amount of an uncured liquid plastic coating material into a plurality of nozzle means, and flow coating said article with said uncured liquid plastic coating material as it passes beneath said coating station, the improvement comprising: immediately upon termination of the flow of uncured liquid plastic material, creating a sufficient negative pressure in said plurality of nozzle means to draw back into said nozzle means any remaining uncured liquid plastic coating material adhering to said nozzle means but insufficient to cause air to be sucked back into said nozzle means, whereby drippage of said uncured liquid plastic coating material onto the freshly coated article is prevented.

4,225,639
PROCESS FOR PREPARING ALUMINA BEING SUITABLE FOR LAYER CHROMATOGRAPHY

József Mátyási, Almásfüzitö-felsö; Béla Kökeny; László Zsembery, both of Almásfüzitö; György Kaptay, and Sándor Németh, both of Almásfüzitö-felsö, all of Hungary, assignors to Magyar Aluminiumipari Troszt, Budapest, Hungary

Filed Jun. 19, 1979, Ser. No. 49,653
Claims priority, application Hungary, Jun. 26, 1978, AA 900
Int. Cl.[2] C01F 7/02; B01D 15/08
U.S. Cl. 427—372.2 7 Claims

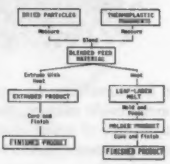
1. Process for producing alumina being suitable for layer chromatography, characterized in that an aluminium trihydroxide containing 34 to 37% by weight of bayerite, 3 to 5% by weight of pseudoboehmite and 60 to 62% by weight of amorphous aluminium trihydroxide is heated at 300° C. to 400° C. for 2 to 4 hours.

5. Process as claimed in any of the claims 1, 2, 3 or 4, characterized in that after having been suspended and applied onto the plate the activated material is dried for 1 to 3 hours at a temperature of 30° C. to 100° C.

4,225,640
METHOD OF RECLAIMING THERMOPLASTIC MATERIALS FROM MUNICIPAL WASTE AND PRODUCT PRODUCED THEREBY

Robert A. Erb, Valley Forge, Pa., assignor to Redmar Investors, Inc., New York, N.Y.

Filed May 4, 1978, Ser. No. 902,850
Int. Cl.[2] B32B 27/18
U.S. Cl. 428—2 15 Claims



1. A method of reclaiming material from domestic waste comprising the steps of providing a quantity of leaf particles which have a small thickness relative to their transverse dimensions of width and length, combining said leaf particles with a quantity of thermoplastic material of mixed constituents derived from said domestic waste, at least some of said mixed constituents being incompatible, mixing and blending said quantities together and causing the thermoplastic material to fuse and adhere to the leaf particles as a coating bonded thereon, said incompatible constituents of the thermoplastic material being bonded to different parts of the same particles, whereby said leaf particles serve as a bridge to link said incompatible thermoplastic constituents together, consolidating said blended material with heat and pressure to form a product, and thereafter curing and finishing said product to provide a useful end product.

11. A useful product made by reclaiming material from domestic waste comprising a formed body consisting essentially of leaf particles and thermoplastic material having a variety of constituents, at least some of which are incompatible, said leaf particles having a small thickness relative to their transverse dimensions of width and length and being disposed in successive overlapping relationship and being coated with said thermoplastic material, said thermoplastic bonding to said leaf particles and effectively bonding said leaf particles together into a unitary mass where the particles overlap, and the incompatible constituents being coated onto different parts of the same leaf particles whereby said leaf particles link said incompatible thermoplastic constituents together.

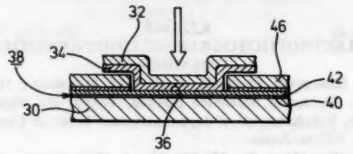
4,225,641
PICTURE-MAKING DEVICE

Motohiro Yokomizo, Ohkawa-cho, No. 2-15, Senju, Adachi-ku, Tokyo, Japan

Filed Dec. 27, 1977, Ser. No. 864,937
Claims priority, application Japan, Mar. 18, 1977, 52-32114[U]; Jul. 8, 1977, 52-90460[U]
Int. Cl.[2] B32B 3/14
U.S. Cl. 428—41 9 Claims

1. A picture-making device comprising in combination a picture-making plate and a transfer film, said picture-making plate comprising a base plate, an adhesive layer disposed on one surface of said base plate and a liner which is superposed

releasably on the surface of said adhesive layer, said liner having a plurality of cut lines in a square lattice pattern, and said transfer film comprising a transparent carrier carrying on one surface thereof a releasable layer comprising a coloring agent that contrasts well with said liner to be transferred in part to a portion of said adhesive layer from which a corresponding overlying square portion of said liner has been removed, said releasable layer having greater adhesion to said adhesive layer than to said transparent carrier but having greater adhesion to said transparent carrier than to said liner, whereby said releasable layer transfers to said picture-making plate only in those areas from which said liner has been removed.

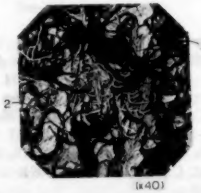


4,225,642

RAISED AND FUSED FABRIC FILTER AND PROCESS FOR PRODUCING THE SAME

Tadashi Hirakawa, Kusatsu, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Nov. 23, 1977, Ser. No. 854,334
Claims priority, application Japan, Dec. 8, 1976, 51-146554; Jan. 5, 1977, 52-65
Int. Cl.[2] D04H *1/04*
U.S. Cl. 428—91 **12 Claims**



1. In a fabric filter comprising a woven or knitted fabric which comprises thermoplastic polymer fibers having a fibril layer which has been formed by raising a surface of said fabric and which is composed essentially of the thermoplastic polymer fibers, the improvement comprising a portion of said fibrils in said fibril layer being fuse-bonded to each other to form networks of said fuse-bonded fibrils on the surface of said fibril layer.

4,225,643

RETICULATED POLYVINYL CHLORIDE PLASTISOL FOAMS

George L. Lilley, Manheim, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 23, 1978, Ser. No. 953,362
Int. Cl.[2] B29D *27/04*
U.S. Cl. 428—207 **4 Claims**

1. A process for producing a reticulated polyvinyl chloride plastisol foam which comprises:

(a) blending particles of at least one polyvinyl chloride dispersion grade plastisol resin with a stabilizer and a plasticizer to form a plastisol;

(b) incorporating into the plastisol particles of at least one polyvinyl chloride dryblend resin, which particles will take in plasticizer by absorption and become solvated, each particle receiving a uniform concentration of plasticizer, the particles acting as filler at this point and being dispersed in the plastisol;

(c) incorporating a frothing agent into the plastisol and mechanically frothing the resulting plastisol composition to form a plastisol froth, the plasticizer being the continuous phase of the froth;

(d) depositing a layer of the plastisol froth on a backing sheet; and,

(e) converting the plastisol froth to a reticulated foam by heating the plastisol froth to a temperature below the melt temperature of the plastisol froth but sufficient to sequentially (1) first cause the particles of dryblend resin to take in plasticizer by absorption and become solvated, the solvation occurring within a temperature range of from about 130° to about 180° F., (2) second cause the plastisol froth to gel, forming a foam matrix which contains the plasticizer solvated dryblend resin particles, (3) third cause the plasticizer solvated dryblend resin particles to melt onto and become part of the gelled plastisol foam matrix, forming voids where the dryblend resin particles had been, and (4) fourth fuse the gelled plastisol foam matrix, during which heating the melted dryblend resin fuses with and becomes homogeneous with the plastisol foam matrix.

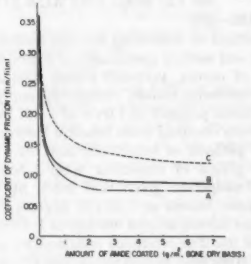
4. A thru color, decorative cushioned floor covering produced according to the process of claim 3.

4,225,644

LOW TEMPERATURE HEAT-SEALABLE BI-AXIALLY ORIENTED POLYPROPYLENE COMPOSITE FILM AND PROCESS FOR PRODUCTION THEREOF

Mikio Tsuchiya, Shiga; Takashi Kawamura; Kazuo Ootaka, both of Mitomachi, and Yukio Ozaki, Shiga, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1978, Ser. No. 956,347
Claims priority, application Japan, Oct. 18, 1978, 53-128204
Int. Cl.[3] B32B *7/02*
U.S. Cl. 428—215 **24 Claims**



1. A low temperature heat-sealable bi-axially oriented polypropylene composite film which comprises:

(a) a substrate layer comprising a bi-axially oriented polypropylene film;

(b) a uni-axially or bi-axially oriented lamination layer or layers comprising ethylene-butene copolymer or a resin mixture comprising ethylene-butene copolymer laminated on at least one surface of said substrate layer; and

(c) a uni-axially or bi-axially oriented extremely thin continuous layer of a primary higher fatty acid amide or an N-substituted higher fatty acid amide formed through the sequential coating and orientating on at least one of the outer surfaces of the composite film.

4,225,645

FLAME-RETARDANT POLYURETHANE COMPOSITIONS

Chung-Ling Mao, Sandy Hook, and Walter Nudenberg, Newtown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 796,585, May 13, 1977, Pat. No. 4,147,678. This application Nov. 1, 1978, Ser. No. 956,703

The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.

Int. Cl.[2] C08K *5/34*

U.S. Cl. 428—290 **9 Claims**

1. A fabric-reinforced substrate comprising a chain extendable crosslinkable polyurethane prepolymer and

(a) about 10 to about 50 parts by weight per 100 parts by weight of polyurethane of an organic additive selected from the group consisting of chlorine-substituted and bromine-substituted aliphatic, aromatic, alicyclic and mixed hydrocarbyl compounds having a halogen content in the range of about 35 to about 80 weight percent and optionally containing oxygen substituents in the form of hydroxyl, anhydride, ether, ester or amide groups and which are substantially non-volatile, stable and non-reactive toward said polyurethane and any auxiliary ingredients of said composition at the curing temperature of said polyurethane, and mixtures thereof;

(b) about 1 to about 10 parts by weight per 100 parts by weight of polyurethane of an antimony compound selected from the group consisting of the antimony oxides, sulfides, salts of the alkali metals of Group I of the Periodic Table, and salts of organic acids and their pentavalent derivatives, esters of antimonius acids and their pentavalent derivatives, cyclic antimonites, the oxides of arsenic and the oxides of bismuth; and

(c) about 3 to about 40 parts by weight per 100 parts by weight of polyurethane of a C_1 to C_5 hexaalkoxymethyl melamine.

4,225,646

METHOD OF TREATING FIBERS AND FABRICS

James E. Cashion, Jr., Fountain Inn, S.C., assignor to Pat-Chem, Inc., Greenville, S.C.

Filed May 9, 1979, Ser. No. 37,364

Int. Cl.[3] B05D *3/02;* **B32B** *27/00*

U.S. Cl. 428—290 **13 Claims**

1. A method of improving the dimensional stability, crease resistance and surface appearance of fibers, fabrics and textile products of cotton, polyester-cotton blends, polyesters and polyester-synthetic blends, comprising applying to the fiber, fabric or textile product, to a level of 2–4% by weight of added solids, a resin obtained from reaction between (a) 30–35% by weight of phthalic or isophthalic acid, 50–55% by weight of polyether glycol of molecular weight 500–700, 8–12% by weight of neopentyl glycol and 2–5% by weight of trimethylolpropane heated at 120–130 degrees C to produce an intermediate having an acid number of 1–17 and from a further reaction of the thus-produced intermediate with (b) 3–6% by weight of trimellitic anhydride at 160–190 degrees C to produce the resin having an acid number of 1–50.

4,225,647

ARTICLES HAVING THIN, CONTINUOUS, IMPERVIOUS COATINGS

Richard A. Parent, 69 Waterford Way, Fairport, N.Y.

Filed Dec. 2, 1977, Ser. No. 857,028

Int. Cl.[3] B32B *15/08, 27/28, 27/12*

U.S. Cl. 428—336 **6 Claims**

1. A coated metal article comprising a metal substrate having a first layer of a substituted silicon compound containing an ethylenically unsaturated group bonded to the silicon of the silicon compound by a carbon to silicon bond and at least one hydrolyzable group attached directly to the silicon of the silicon compound, and a second outer layer comprising a substituted and/or unsubstituted poly(p-xylylene) polymer, said coated metal article being characterized as possessing a protective outer coating as to render said article more resistant to attack from physical, chemical, or biological damage and provide said article with increased useful lifetime properties.

4,225,648

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MEMBER

Haruo Hasegawa, Kawasaki; Kenji Seki, Yokohama; Hideaki Ema, Kawasaki; Masahide Harada, Tokyo, and Shiro Yamane, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 737,847, Nov. 1, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,369

Claims priority, application Japan, Nov. 11, 1975, 50-134695

Int. Cl.[3] G03G *5/00*

U.S. Cl. 428—336 **7 Claims**

1. In an electrophotographic light-sensitive plate, comprising an electroconductive support and a photoconductive layer overlaying said support, the improvement which comprises: said photoconductive layer is overcoated with an outermost protective coating layer having a thickness of from 0.5 microns to 15 microns, said coating layer consisting essentially of at least one organic polymer selected from the group consisting of polyamide, polyester, polyurethane, polystyrene, poly-N-butylmethacrylate, polycarbonate, polyvinylformal, polyvinylacetal, polyvinylbutyral, ethyl cellulose, nitrocellulose, cellulose propionate and acetylcellulose, said organic polymer containing from 0.1 to 20 percent by weight of Lewis acid mixed therein, said coating layer being effective to protect the photoconductive layer from abrasion and to provide high resolution on development of electrostatic latent images thereon.

4,225,649

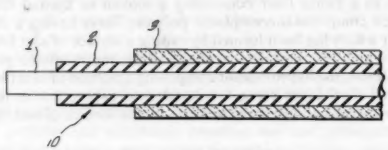
FIRE RETARDANT COMPOSITION AND CABLES COATED THEREWITH

Roger L. Peterson, Los Angeles, Calif., assignor to The Flamemaster Corporation, Sun Valley, Calif.

Continuation-in-part of Ser. No. 842,267, Oct. 14, 1977, abandoned. This application Sep. 27, 1978, Ser. No. 946,174

Int. Cl.[2] B32B *15/08;* **C09K** *3/28*

U.S. Cl. 428—383 **27 Claims**



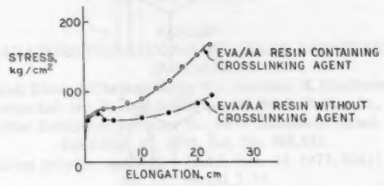
1. A self-extinguishing fire-protective composition which comprises an aqueous emulsion containing from about 25 to about 90 weight percent total solids and comprising from about 1.5 to about 50 weight percent of water-emulsified resin solids, about 0.5 to about 20 weight percent of a halogen containing organic compound, about 1.5 to about 70 weight percent low temperature fibers, and about 5 to 70 weight percent clay.

12. An electrical cable comprising an internal metal core, a layer of insulation surrounding said core, and a self-extinguishing fire-protective coating about said layer of insulation, said coating being the dried residue of an aqueous emulsion and comprising from about 2 to about 90 weight percent of water-emulsified resin solids, about 0.75 to about 30 weight percent of a compound containing organically bound halogen, about 2 to about 90 weight percent low temperature fibers and about 7 to about 90 weight percent clay.

4,225,650
CROSSLINKABLE POLYMER POWDER AND LAMINATE

Robert A. van Brederode, Baytown, Tex., and Robert A. Steinkamp, Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 22, 1975, Ser. No. 624,959
Int. Cl.[2] B32B 27/00, 5/16
U.S. Cl. 428—405 24 Claims



1. A crosslinkable powder comprising a major amount of porous polymeric particles of an organic, thermoplastic polymer said polymer particles being less than 100 microns in size and having a decomposition point higher than 100° C., having sorbed into each of the porous polymer particles a minor amount of an organic peroxide and a minor amount of an organosilicon compound.

4,225,651
CURING MEMBRANE FOR CONCRETE AND THE LIKE

Thomas W. Hutton, Doylestown, and Joseph A. Lavelle, Bethlehem, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

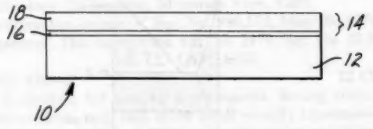
Filed May 10, 1977, Ser. No. 795,601
Int. Cl.[2] B32B 19/04
U.S. Cl. 428—443 9 Claims

1. In a process of applying a polymeric coating to an uncured hydraulic cement-containing material prior to curing the same, the improvement of applying thereto a film of an addition polymer prepared from about 10 to 50 percent by weight of an ester of acrylic or methacrylic acid, the alcohol moiety of which has from 12 to about 20 carbon atoms, about 40 to 89.5 percent by weight of a vinyl aromatic monomer, and about 0.5 to 5 percent by weight of a copolymerizable ethylenically unsaturated carboxylic acid, vinyl sulfonic acid, or salt thereof, and curing the hydraulic cement-containing composition.

4,225,652
TRANSPARENT SHEET MATERIAL

Elizabeth A. Mercer, and John F. Eisele, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

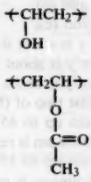
Filed Apr. 9, 1979, Ser. No. 28,347
Int. Cl.[2] B32B 27/08
U.S. Cl. 428—515 10 Claims



1. A sheet material useful in preparing visual transparencies comprising

(a) a thin backing which is transparent to visible light; and

(b) a continuous ink-receptive stratum on one major surface of said backing wherein said stratum is transparent to visible light and employs (a) a first polymer that is water-soluble, rubbery, alkaline in aqueous solution and consists essentially of the reaction product of a water-soluble secondary mono amine and an epoxidized water-insoluble, neutral, rubbery polymer selected from cis-1,4-polybutadiene, butadiene:styrene copolymer, butadiene:acrylonitrile copolymer and cis-1,4-polyisoprene, and (b) a second polymer that has a weight average molecular weight of at least about 50,000 and contains the repeating units



wherein the weight ratio of type I units to type II units in said second polymer is in the range of about 2:1 to 6:1; and wherein said ink-receptive stratum is selected from

(i) a single layer comprising a mixture of from about 30% to 70% by weight of said first polymer and from about 70% to 30% by weight of said second polymer, and

(ii) a multiple layer comprising a first continuous layer of said first polymer on said backing and a second continuous layer of said second polymer on said first continuous layer of first polymer.

4,225,653
X-RAY INTENSIFYING SCREEN BASED ON RARE EARTH TANTALATE

Lothar H. Brixner, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 933,080, Aug. 11, 1978, abandoned. This application Mar. 26, 1979, Ser. No. 23,966
Int. Cl.[2] C09K 11/46; G01T 1/00
U.S. Cl. 428—539 15 Claims

1. Process for preparing the phosphor having the monoclinic M′ structure and selected from the group consisting of:

(a) $YNb_xTa_{1-x}O_4$, where x is 0 to about 0.15;

(b) $LuNb_xTa_{1-x}O_4$, where x is 0 to about 0.2;

(c) $Y_{1-y}Tm_yTaO_4$, where y is 0 to about 0.03;

(d) a solid solution of (a) and (b);

(e) a solid solution of (a) and (c);

(f) $Y_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(g) $Lu_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(h) $Gd_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;

(i) a solid solution of at least two of (f), (g) and (h);

(j) any of (a) to (i) wherein up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by lanthanum;

(k) any of (a) to (i) wherein up to 15 mole percent of the yttrium, lutetium or gadolinium is replaced by ytterbium; and

(l) any of (a), (b), (c), (d) and (e) wherein up to 15 mole percent of the yttrium or lutetium is replaced by gadolinium,

which process comprises the steps:

(a) intimately mixing stoichiometric quantities of appropriate precursor oxides;

(b) prefiring the resultant mixture in air in an inert container at about 1000° C. to about 1200° C. for about 10 to about 14 hours;

(c) mixing the resultant prefired mixture with a flux selected from the group consisting of Li_2SO_4, LiCl and a $BaCl_2$./LiCl eutectic mixture, the weight of the flux being 1/5 to ½ of the total weight of the mixture;

(d) firing the flux-containing mixture in an inert container at about 1100° C. to less than about 1450° C. for at least about 3 hours; and

(e) recovering the phosphor. (e) recovering the phosphor.

6. An X-ray intensifying screen comprising a phosphor-binder coating upon a flexible support wherein the phosphor is comprised of colorless single-phase particles having a surface area of about 0.075 to 0.300 m^2/g, a particle size of about 3 to 10 μm, the monoclinic M' structure and selected from the group consisting of:

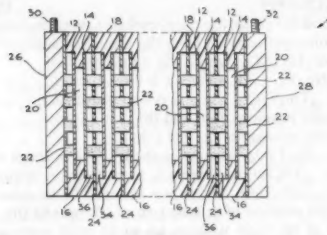
(a) $YNb_xTa_{1-x}O_4$, where x is 0 to about 0.15;
(b) $LuNb_xTa_{1-x}O_4$, where x is 0 to about 0.2;
(c) $Y_{1-y}Tm_yTaO_4$, where y is 0 to about 0.03;
(d) a solid solution of (a) and (b);
(e) a solid solution of (a) and (c);
(f) $Y_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;
(g) $Lu_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;
(h) $Gd_{1-y}Tb_yTaO_4$, where y is about 0.001 to about 0.15;
(i) a solid solution of at least two of (f), (g) and (h);
(j) any of (a) to (i) wherein up to 45 mole percent of the yttrium, lutetium or gadolinium is replaced by lanthanum;
(k) any of (a) to (i) wherein up to 15 mole percent of the yttrium, lutetium or gadolinium is replaced by ytterbium; and
(l) any of (a), (b), (c), (d) and (e) wherein up to 15 mole percent of the yttrium or lutetium is replaced by gadolinium.

4,225,654

FUEL CELL

Hiroyuki Tajima, and Tetsuo Arai, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Tokyo, Japan

Filed May 7, 1979, Ser. No. 36,610
Claims priority, application Japan, May 10, 1978, 53-55218
Int. Cl.³ H01M *8/24*
U.S. Cl. 429—34 **10 Claims**



1. A multi-layered fuel cell including: a plurality of adjacent unitary cells each including an anode and a cathode;

a plastic, gas-impermeable separator physically separating the anode electrode of one of said plurality of cells from the cathode electrode of the adjacent cell in said plurality;

a plurality of conductors extending through said separator and flexibly supported therein by elastic, gas-tight seals;

said conductors interconnecting, electrically, said anode electrode of one of said unitary cells to said cathode electrode of the next succeeding cell in said plurality;

a chamber for electrolyte formed, at least in part, by the anode and cathode electrodes of each unitary cell;

housing means for supporting said unitary cells in fixed relationship with respect to each other;

means for introducing fuel and oxidizer gases to said unitary cells; and,

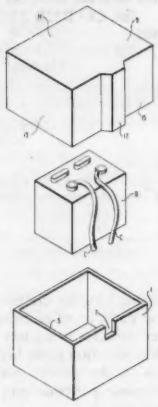
means for extracting electricity from said plurality of unitary cells.

4,225,655

WATERTIGHT BATTERY BOX

Louis Pesce, 1311 W. Webster Ave., Winter Park, Fla. 32789

Filed Apr. 10, 1979, Ser. No. 28,923
Int. Cl.³ H01M *2/10*
U.S. Cl. 429—100 **4 Claims**



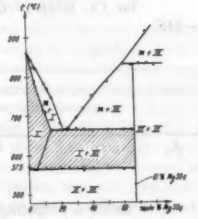
1. A watertight battery box for receiving a battery having positive and negative terminals and a cable extending from each of said terminals, comprising an upwardly open base and a downwardly opening cover, the cover having a vertically extending inwardly opening channel on at least one side wall thereof, said at least one channel being closed at its top and open at its bottom to confine said cables between the interior of said at least one channel and at least one side wall of said base, said base and cover snugly interfitting with each other and the outer contour of said channel extending outwardly from the outer contour of said cover which is disposed on opposite sides of said channel.

4,225,656

SOLID ELECTROLYTE FOR ELECTROMECHANICAL CELLS AND METHOD FOR THE PRODUCTION THEREOF

Arnold Lunden, Laangedragsvaegen 114, Vaestra Froelunda; Bjorn Heed, Utlandagatan 19, Goeteborg, and Arnold J. L. Kvist, Roennbaersvaegen 16, Ronneby, all of Sweden

Continuation of Ser. No. 730,448, Oct. 7, 1976, abandoned, and Ser. No. 590,116, Jun. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 466,508, May 2, 1974, abandoned. This application Dec. 19, 1977, Ser. No. 862,098
Int. Cl.² H01M *6/18*
U.S. Cl. 429—191 **28 Claims**



1. An electrochemical cell having a solid electrolyte of high conductivity comprising a mixture of at least two salts of the composition M_2SO_4—Me_xSO_4 where M is an ion of one or

more alkali metals, Ag or a mixture thereof, Me is an ion of a divalent metal or Ag and x is 1 when Me is divalent and 2 when Me is Ag, with the proviso that at least when Me is Ag, the mixture further contains a salt of the composition Ma_xSO_4 or $Ma\ Y_z$ where Ma is an ion of an alkali metal, Ag or a divalent metal other than M, Y is a halogen, x is 1 when Ma is divalent and 2 when Ma is an alkali metal or silver and z is 1 when Ma is an alkali metal or silver and 2 when Ma is divalent, and wherein the alkali metal salt is present in the electrolyte salt mixture in an amount of at least 50 mole percent.

4,225,657

SEPARATORS FOR SECONDARY CELLS AND SIMILAR SYSTEMS

Yitzhak Klein, 1 Chatham Sofer St.; Jonathan R. Goldstein, 51 Hashachal St.; Perach Valentina, 48 Meir Nakar St., and Esther Kobliakov, 9 Breuer St., all of Jerusalem, Israel

Filed Dec. 12, 1978, Ser. No. 968,832

Claims priority, application Israel, Dec. 14, 1977, 53611

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—248 **9 Claims**

1. A separator for use in alkaline secondary zinc cells and for use in electrochemical systems where permeation of hydroxyl ions is desired and where permeation of zincate ions is to be prevented, comprising an inert porous support sheet to which there is applied a layer comprising a polymeric binder and a compound selected from the group consisting of carbonates and hydroxy-carbonates of nickel, cerium, lanthanum, and mixtures thereof.

4,225,658

ULTRASONIC IMAGING WITH CATALYTIC ELEMENTS

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1979, Ser. No. 8,910

Int. Cl.² G03C *5/04*

U.S. Cl. 430—3 **15 Claims**

1. A process of producing an ultrasonographic image comprising

bringing into contact a transport liquid containing a catalyst poison and an element comprising a support coated with an imaging catalyst and barrier means, the barrier means being interposed between the catalyst poison containing transport liquid and the imaging catalyst to impede diffusion of the catalyst poison,

exposing the element to ultrasound in an image pattern to accelerate diffusion of the catalyst poison through the barrier means in exposed areas of the element and

catalyzing an image-forming reaction by the imaging catalyst which remains unpoisoned, so that an image pattern is produced which corresponds to the pattern of ultrasonic exposure.

4,225,659

METHOD FOR MAKING THERMOCHROMIC PHOTOMASKS

Jerome Drexler, Los Altos Hills, Calif., assignor to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 910,113, May 30, 1978, abandoned. This application Apr. 10, 1979, Ser. No. 28,907

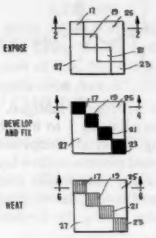
Int. Cl.³ G03C *5/00*

U.S. Cl. 430—5 **22 Claims**

1. A method for making a photomask having silver and non-silver areas with said silver areas visually transmissive to yellow-orange light and opaque to ultraviolet radiation, the non-silver areas transparent to visible light and ultraviolet radiation comprising,

producing a photomask pattern by exposing to actinic radiation and developing an image pattern in a silver-halide emulsion on a photoplate with resulting silver and non-silver areas,

heating said emulsion to a temperature within a 250° C. to 320° C. range for 10 seconds to 3 minutes until such time as the silver areas become visually transmissive to yellow-orange light and the gelatin of the non-silver areas remains essentially clear.



4,225,660

TREATED TONER CARRIER AND METHOD OF MAKING THE SAME

John J. Russell, Jr., Woodbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 8, 1979, Ser. No. 1,650

Int. Cl.³ G03G *9/14*

U.S. Cl. 430—108 **5 Claims**

1. A particulate magnetic carrier for use in a development powder, the particle being coated with a polymer capable of providing reactive sites of functional organic chemical groupings distributed along the polymeric chain and having on the outer surface of said coating a perfluoro compound selected from the group consisting of perfluoro alcohols, perfluoro amines, and perfluoro acids covalently reacted with said sites.

4,225,661

PHOTOREACTIVE COATING COMPOSITIONS AND PHOTOMECHANICAL PLATES PRODUCED THEREWITH

Thaddeus M. Muzyczko, Downers Grove, Ill., assignor to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 732,112, Oct. 13, 1976, abandoned. This application May 10, 1978, Ser. No. 904,378

Int. Cl.² G03C *1/52*; G03F *7/02*

U.S. Cl. 430—156 **30 Claims**

1. A high-speed photomechanical presensitized plate suited for use as a lithographic plate and the like on which a visual latent image is produced immediately upon exposure to light, said plate comprising: a support member; a light sensitive, water soluble diazo resin layer over said support member; and, an overlayer coating on said diazo resin layer, said overlayer coating including in admixture, a photochromic compound and a light sensitive polymer selected from the group cinnamoylated and acrylated resins.

4,225,662

DIAZO COPYING MATERIAL

Tsutomu Matsuda; Masanori Rimoto, both of Numazu, and Chihiro Hayashi, Osaka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

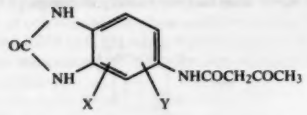
Filed Apr. 11, 1979, Ser. No. 29,060

Claims priority, application Japan, Apr. 14, 1978, 53-43286

Int. Cl.² G03C *1/58*

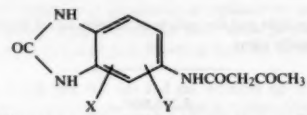
U.S. Cl. 430—173 **5 Claims**

1. A diazo copying material comprising a support and a photosensitive layer, said photosensitive layer consisting essentially of a photosensitive diazonium compound and a yellow-developing coupler having the formula:



wherein X and Y are hydrogen, halogen, alkyl having 1 to 6 carbon atoms or alkoxy having 1 to 6 carbon atoms.

3. A diazo copying material comprising a support and a photosensitive layer, said photosensitive layer consisting essentially of a photosensitive diazonium compound, a yellow-developing coupler and a blue-developing coupler, said yellow-developing coupler having the formula:



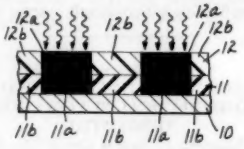
wherein X and Y are hydrogen, halogen, alkyl having 1 to 6 carbon atoms or alkoxy having 1 to 6 carbon atoms.

4,225,663

DRIOGRAPHIC PRINTING PLATE

Alan Ball, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 26, 1974, Ser. No. 500,385
Int. Cl.[2] G03F 7/02; B41N 1/00
U.S. Cl. 430—303 **12 Claims**



1. An imaged planographic driographic printing plate comprising a substrate having coated on one surface thereof a highly abhesive layer comprising a cured organopolysiloxane elastomer which is capable of repelling oleo ink when dry and is characterized by an adhesive release value when dry of less than about 100 grams per inch, said abhesive layer containing therein polymerizable ethylenically-unsaturated groups, and having chemically bonded to said abhesive layer in image areas an oleo ink receptive polymeric layer, said polymeric layer being chemically bonded to said abhesive layer by photo-induced polymerization.

4,225,664

X-RAY RESIST CONTAINING POLY(2,3-DICHLORO-1-PROPYL ACRYLATE) AND POLY(GLYCIDYL METHACRYLATE-CO-ETHYL ACRYLATE)

Joseph M. Moran, Berkeley Heights, and Gary N. Taylor, Fanwood, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1979, Ser. No. 14,243
Int. Cl.[2] G03C 1/71; B05D 3/06
U.S. Cl. 430—306 **26 Claims**

1. Article comprising a substrate coated with an x-ray curable material having a thickness of at least 0.5 microns and is CHARACTERIZED IN THAT said x-ray curable material consists essentially of a mixture of a first polymer, said first polymer being poly(2,3-dichloro-1-propyl acrylate), said poly(2,3-dichloro-1-propyl acrylate) having a weight average molecular weight between 300,000 and 3,500,000, and a second polymer, said second polymer being poly(glycidyl methacrylate-co-ethyl acrylate), said poly(glycidyl methacrylate-co-ethyl acrylate) constituting between 1 percent and 20 percent, by weight, of said mixture.

10. Process for pattern delineating a substrate coated with a negative resist material having a thickness of at least 0.5 microns comprising the steps of

exposing selected portions of said resist material to radiation which causes said exposed portions to become less easily removable with respect to the unexposed portions, in which said resist consists essentially of a polymer;

removing the unexposed portions; and

processing the pattern delineated resist and substrate with processing steps that alter the bared substrate areas CHARACTERIZED IN THAT said resist material consists essentially of a mixture of a first polymer, said first polymer being poly(2,3-dichloro-1-propyl acrylate), said poly(2,3-dichloro-1-propyl acrylate) having a weight average molecular weight between 300,000 and 3,500,000, and a second polymer, said second polymer being poly(-glycidyl methacrylate-co-ethyl acrylate), said poly(glycidyl methacrylate-co-ethyl acrylate) constituting between 1 percent and 20 percent by weight, of said mixture.

4,225,665

PHOTOGRAPHIC ELEMENT IN WHICH THE ANTISTATIC LAYER IS INTERLINKED IN THE BASE

Frank L. Schadt, III, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1978, Ser. No. 971,561
Int. Cl.[2] G03C 1/78; G03C 1/02
U.S. Cl. 430—529 **16 Claims**

1. A photographic element comprising a polymeric shaped article having available carboxyl groups on the surface thereof and which is coated with a permanent antistatic layer consisting essentially of the reaction product of

(1) a water-soluble, electrically conductive polymer having functionally attached carboxyl groups integral to the polymer,

(2) a hydrophobic polymer containing carboxyl groups, and

(3) a polyfunctional aziridine.

4,225,666

SILVER HALIDE PRECIPITATION AND METHINE DYE SPECTRAL SENSITIZATION PROCESS AND PRODUCTS THEREOF

David J. Locker, and Richard L. Daubendiek, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 881,230, Feb. 27, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,911
Int. Cl.[2] G03C 1/02, 1/16
U.S. Cl. 430—569 **19 Claims**

1. In a method of preparing a spectrally sensitized radiation-sensitive silver halide emulsion comprising introducing into a reaction vessel an aqueous solution of a silver salt, an aqueous solution of a halide salt, a peptizer and a methine spectral sensitizing dye, the dye being added to the reaction vessel during the course of introducing at least one of the aqueous salt solutions, the improvement comprising

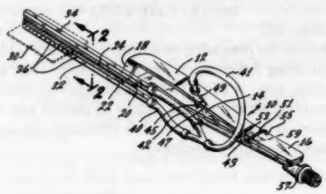
delaying addition of the spectral sensitizing dye until silver halide grain nuclei are present in the reaction vessel having a mean diameter which is at least 0.01 of the mean diameter of the silver halide grains of the radiation-sensitive silver halide emulsion to be prepared.

4,225,667

DENTAL APPLIANCE

Philip H. Ruben, 9201 Sunset Blvd., Suite 903, Los Angeles, Calif. 90069

Filed Dec. 18, 1978, Ser. No. 970,327
Int. Cl.[2] A61C 3/00
U.S. Cl. 433—162 10 Claims



1. A dental appliance for holding marking paper for use in making a marking of a patient's bite, including,

a tweezer member, including a pair of resilient portions and a pair of opposing jaw portions for receiving and supporting the marking paper and with intermediate means interconnecting each jaw portion with one of the resilient portions,

the jaw portions maintained by the resilient portions in a normally closed position for supporting the marking paper and with the jaw portions in an open position for receiving the marking paper in accordance with the resilient portions moved toward each other,

at least one air supply means operatively coupled to one of the jaw portions for directing a supply of air toward the marking paper when supported by the jaw portions, and

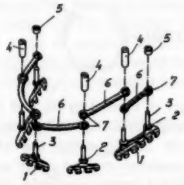
;the air supply means formed as an elongated tubular member open at one end and closed at the other end having at least one opening along its length for directing air supplied from the open end.

4,225,668

BLADE ENDO-OSSEOUS APPARATUS FOR DENTAL PLATES, AND FIXING METHOD THEREFOR

Gian V. Bartoli, Milan, Italy

Filed Dec. 8, 1978, Ser. No. 967,702
Claims priority, application Italy, Dec. 16, 1977, 30857 A/77
Int. Cl.[3] A61C 13/00
U.S. Cl. 433—176 11 Claims



1. An endo-osseous apparatus for the teeth of the prosthesis comprising:

a plurality of blades for the anchoring to the osseous tissue of the gums;

a threaded pin projecting from each anchoring blade;

a cap placed onto each said pin, said cap being held housed within the gums;

a first connecting means comprising rods between the adjacent blades to join the adjacent blades provided with orifices for the insertion of said pins;

second means for fixing said first connecting means to the blades and for stabilizing the prosthesis, engageable with each pin, said second means comprising a hollow threaded element; and

third means for screwing the prothesis onto said second supporting means.

4,225,669

STAINING AND ANALYSIS OF BACTERIA

Joseph L. Melnick, and Craig Wallis, both of Houston, Tex.

Continuation-in-part of Ser. No. 945,197, Sep. 25, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,900
Int. Cl.[3] C12Q 1/29, 1/18, 1/04, 1/06
U.S. Cl. 435—29 52 Claims

1. A composition for staining bacteria at a pH above about 7.0 comprising:

(a) a chelating agent effective at a pH above about 7.0; and

(b) a dye capable of staining bacteria at a pH above about 7.0.

4,225,670

PRODUCTION OF TUMOR ANGIOGENESIS FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Joseph Feder, University City, and Mau-Jung Kuo, Creve Coeur, all of Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1978, Ser. No. 974,405
Int. Cl.[2] C12P 1/00
U.S. Cl. 435—41 6 Claims

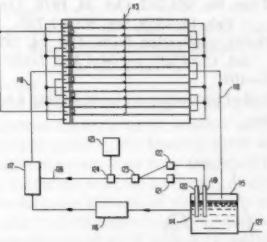
1. Process for the production of human TAF in vitro comprising growing the human Burkitt lymphoma cell line Raji in agitated, liquid suspension of nutrient culture medium at about 35°–38° C. for a sufficient time to elaborate TAF and isolating the resulting TAF from the cells or cell product.

4,225,671

PROCESS FOR THE IN-VITRO BIOSYNTHESIS OF HORMONES, ESPECIALLY INSULIN

Herwig Puchinger, Neu Isenburg; Ulrich Mueller, Ruesselsheim, and Manfred Sernetz, Krofdorf, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 9, 1978, Ser. No. 914,138
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726313
Int. Cl.[2] C12P 21/04
U.S. Cl. 435—71 12 Claims



1. Process for the in-vitro biosynthesis of a hormone comprising the steps of (a) introducing (i) cells from organs or tissues of animal or human origin into one or more cell culture spaces and (ii) culture medium separately into one or more culture medium spaces, each cell culture space having a flat top and flat bottom, each culture medium space having a flat top and a flat bottom, when more than one culture medium space and more than one cell culture space are used, the culture medium spaces are in alternating relationship to the cell culture spaces, the culture medium spaces are adjacent to the cell culture spaces, and a culture medium space is located on top of each cell culture space, when one culture medium space and one cell culture space are present, the culture medium space is located adjacent to and on top of the cell culture space,

and each culture medium space is separated from each adjacent cell culture space or spaces by a semi-permeable flat membrane which is permeable to liquid and is impermeable to cells, (b) propogating or cultivating in vitro the cells under suitable cell growth or cell cultivation conditions, respectively, whereby the cells in vitro biosynthesize the hormone, and (c) isolating the resultant hormone from the culture medium and/or by processing the cells after removing the cells from the cell culture space.

4,225,672

METHOD FOR PRODUCING MALTOOLIGOSACCHARIDE GLYCOSIDES

Leo M. Hall, 406 Devon Dr., Homewood, Ala. 35209

Filed Feb. 27, 1979, Ser. No. 15,681
Int. Cl.[2] C12P *19/44*
U.S. Cl. 435—74 **8 Claims**

1. A method for producing an α or β maltooligosaccharide glycoside derivative in substantially pure form, comprising incubating an aqueous solution of a glucosyl donor and a chromogenic or fluorogenic glycoside in the presence of a glucanotransferase enzyme (E.C.2.4.1.19) under transglycosylating conditions to form a reaction mixture containing the maltooligosaccharide glycoside derivative; and separating the maltooligosaccharide glycoside derivative from the reaction mixture.

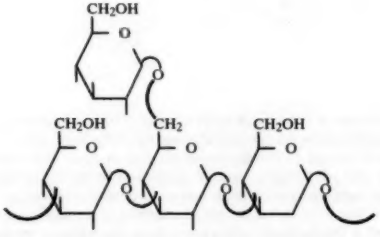
4,225,673

METHOD OF PREPARING GLUCAN HAVING ANTITUMOR ACTIVITY

Mamoru Sugiura, Azatogen, Oazakochino, Konan-shi, Aichiken; Hiroyuki Ohno, 18-305, 1319, Makita-cho, Takatsuki-shi; Yutaro Sasaki, 11-88-504, Okayamate-cho, Hirakata-shi, and Kazuaki Hama, Shinjo Heijst 101, 13-16, Shinjo-cho, Ibaraki-shi, all of Japan

Division of Ser. No. 954,242, Oct. 24, 1978. This application Feb. 16, 1979, Ser. No. 12,717
Claims priority, application Japan, Oct. 24, 1977, 52-126743
Int. Cl.[3] C12P *19/04;* C12R *1/695*
U.S. Cl. 435—101 **1 Claim**

1. A method of producing a glucan having a basic repeating unit structure



and an estimated molecular weight of about two million, comprising culturing mycelia of *Coriolus Versicolor* Iwade FERM-P No. 2743 in a culture medium for Basidiomycetes, and recovering said glucan from the culture medium by subjecting the culture medium to hot water extraction, ethanol precipitation, aqueous sodium acetate elution and ion exchange.

4,225,674

PROCESS FOR PRODUCING NEW ANSAMYCIN ANTIBIOTIC

Walter D. Celmer, New London; Walter P. Cullen, East Lyme; John R. Oscarson, Pawcatuck; Liang H. Huang, East Lyme, all of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Aichi, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,408
Int. Cl.[2] C12P *17/12*
U.S. Cl. 435—122 **1 Claim**

1. A process for preparing an antibiotic mixture which comprises cultivating *Streptomyces nigellus* Prokop subsp. *africanus* Huang subsp. nov. ATCC 31496 in an aqueous nutrient medium containing an assimilable source of carbon and nitrogen until substantial antibiotic activity is obtained and separating said antibiotic mixture therefrom.

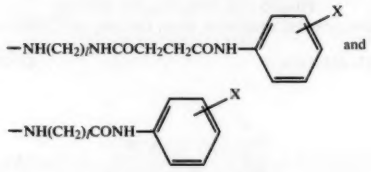
4,225,675

ADSORBENT FOR UROKINASE AND PROCESS FOR THE PRODUCTION OF UROKINASE

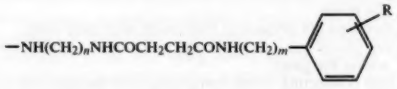
Hiroaki Nakamura, Kawasaki; Izumi Kumita, Ohiso; Yoshiji Sugita, Hiratsuka, and Hideo Takagi, Ohiso, all of Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

Filed Jan. 3, 1978, Ser. No. 866,794
Claims priority, application Japan, Jan. 14, 1977, 52/2327; Jan. 31, 1977, 52/9450
Int. Cl.[2] C07G *7/026*
U.S. Cl. 435—215 **6 Claims**

1. A process for the production of highly pure urokinase which comprises passing an impure aqueous solution of urokinase through a first column packed with a protein absorbent comprising a water insoluble carrier to which is bound a material selected from the group consisting of



where l is an integer of from 3 to 10, and X is a material selected from the group consisting of hydrogen, alkyl, halogen and alkoxycarbonyl; and, passing the effluent therefrom through a second column packed with an adsorbent from urokinase comprising a water insoluble carrier to which is bound a material selected from ghe group of the general formula



where

n is an integer of from 5 to 12,

m is 0 or 1, and

R is (m- or p-) guanidino or (m- or p-) amidino group, and,

eluting the adsorbed urokinase.

4,225,676

METHOD OF PREPARING NUTRIENT MEDIUM FROM LITTER-FREE LIQUID MANURE FOR CULTIVATING MICROORGANISMS AND A PLANT FOR REALIZING SAME

Konstantin P. Zaitsev, Moscow; Mikhail S. Shleizer, Moldavskaya SSR; Svirid I. Voronevsky, Kishinev; Vasily D. Reshetnik, Kishinev; Lazar I. Vain, Kishinev; Vladimir V. Movchan, Moldavskaya SSR; Alexandr S. Kishlar, Moldavskaya SSR; Fagim K. Kireev, Moldavskaya SSR; Vsevolod S. Somov, and Larisa K. Alferova, both of Moscow, all of U.S.S.R., assignors to Moskovsky Tekhnologichesky Institut Myasoni I Molochnoi Promysh Lennosti, U.S.S.R.

Filed Aug. 17, 1977, Ser. No. 825,430
Int. Cl.[2] A23K *1/00*
U.S. Cl. 435—255 **8 Claims**

1. A method for preparing a nutrient medium for microorganism cultivation from litter-free liquid manure, the method comprising the steps of

separating the liquid manure into a concentrated suspension fraction and a clarified liquid fraction;

heating and hydrolyzing, under excess pressure and in the presence of a mineral acid catalyst, the concentrated suspension fraction to form a hydrolysate;

sterilizing the clarified liquid fraction;

mixing the hydrolysate with the sterilized liquid fraction to form a hydrolysate mixture;

neutralizing the hydrolysate mixture to a required pH; and

removing harmful volatile substances from the neutralized mixture by ultraviolet radiation, whereby a neutralized mixture is formed which is suitable for the use as a nutrient medium for cultivating microorganisms.

4,225,677

PROCESS FOR THE CHLOROMETHYLATION OF POLYMERS FOR THE PRODUCTION OF ANIONIC EXCHANGE RESINS

Jacques L. Boutier; Paul D. A. Grammont, and Jean E. E. Herbin, all of Chauny, France, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jan. 12, 1979, Ser. No. 2,850
Claims priority, application France, Feb. 1, 1978, 78 02726
Int. Cl.[2] C08F *8/24*
U.S. Cl. 521—31 **7 Claims**

1. In a process for the chloromethylation of cross-linked vinylaromatic polymers and copolymers using a chloromethylating complex based on chloromethyl methyl ether and sulfuric acid, the improvement which comprises incorporating chlorosulfonic acid into the reactants and replacing the sulfuric acid used in formation of the complex with an equivalent quantity of alkali metal or alkaline earth metal chloride, the amount of metal chloride being adjusted to provide a sulfuric acid/chloromethyl methyl ether molar ratio of at least 0.4 in the complex.

4,225,678

FOAMED POLYURETHANE MATERIALS WITH A BITUMEN AND A HYDROXY FATTY OIL

Santanu Roy, Irvine, Calif., assignor to George F. Thagard, Jr., Newport Beach, Calif.

Continuation-in-part of Ser. No. 882,280, Mar. 1, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 58,734
Int. Cl.[3] C08G *18/14, 18/36*
U.S. Cl. 521—101 **17 Claims**

1. A process for manufacturing a polymeric foam comprising the step of combining the following ingredients:

(a) an intermediate reactant prepared by heating a mixture of a bitumen and a hydroxy fatty oil to a temperature substantially above room temperature and maintaining the mixture at such a temperature for a time sufficient to enable significant fractions of the bitumen and the hydroxy fatty oil to react;

(b) a polyhydroxy compound;

(c) a polyisocyanate; and

(d) a gas-generating agent

to form a polymeric foam.

4,225,679

FLORAL FOAM PRODUCT AND METHOD OF PRODUCING THE SAME WHICH INCORPORATES A FLOWER PRESERVATIVE AND A BACTERIOCIDE

Louis A. Pilato, Bound Brook, N.J., assignor to Pennock, Villamil and Pilato Inc., Bridgewater, N.J.

Division of Ser. No. 241, Jan. 2, 1979. This application May 29, 1979, Ser. No. 42,794
Int. Cl.[3] C08J *9/30*
U.S. Cl. 521—109 **5 Claims**

1. The method of producing a foamed product of the type useful for floral displays which method comprises

mixing at ambient temperature a phenol formaldehyde resin having a viscosity of 1000 to 2000 CPS with soluble additives comprising

a surfactant,

a wetting agent,

a flower preservative selected from the group consisting of water soluble or dispersable saccharides, and

a bacteriocide,

adding a foaming agent to the mixture,

then adding a catalyst to the mixture,

delivering the aforesaid mixture into a preheated mold and retaining it in the mold for a period of about 30 to 60 minutes,

heating the mold and its contents to foam the mixture in the mold for maximum foam formation, and

removing the foamed material from the mold for use.

4,225,680

UREA FORMALDEHYDE FOAM WITH LOW SHRINKAGE

James H. Williams, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 7,482, Jan. 29, 1979. This application Aug. 6, 1979, Ser. No. 63,823
Int. Cl.[2] C08J *9/30*
U.S. Cl. 521—109 **11 Claims**

1. Foam with very low shrinkage which is prepared from mixing an aqueous foaming agent solution and an aqueous urea-formaldehyde solution, the foaming agent solution comprises the relative amounts, in parts by weight, of 15 to 30 parts of an anionic surfactant selected from salts of diphenyl oxide sulfonates and mixtures thereof, 10 to 25 parts of 85% phosphoric acid, and 15 to 25 parts of urea; the resin solution comprises a condensation product of urea and formaldehyde in the ratio of 1.0 to 2.4 mols of formaldehyde per mol of urea; from 6.5 to 500 mmols of a foaming charring agent selected from ethylene glycol and polyalkylene glycols containing from 2 to 8 carbon atoms in the alkylene moiety and having an average molecular weight no greater than 200, glycerine, pentaerythrytol, sugars and mixtures thereof; from 0.3 to 1.2 mmols of a component to provide uniform cell size in the foam selected from water-soluble alkaline earth metal salts and mixtures thereof; from 3 to 310 mmols of a foam hydrolysis resistance component selected from dicyandiamide, guanylurea, calcium cyanamide, guanidine derivatives, hexamethylene tetramine and mixtures thereof; and from 2 to 30 mmols of a foam aging component selected from water-soluble alkali metal halogens and mixtures thereof.

4,225,681

GRAFT POLYESTERS AND SIZED TEXTILES

Robert B. Login, Woodhaven, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 937,690, Aug. 28, 1978. This application Jul. 25, 1979, Ser. No. 60,789

Int. Cl.[2] C08L *61/20, 67/06*

U.S. Cl. 525—30 **9 Claims**

1. A cross-linked graft polyester comprising the reaction product of an aminoplast resin and a graft polyester having free carboxyl groups forming an integral part of the graft polyester chain, said polyester comprising the reaction product of

I. an unsaturated polyester comprising the reaction product of:

(a) at least one polycarboxylic acid reactant comprising (1) a dicarboxylic acid reactant selected from the group consisting of dicarboxylic acids, corresponding dicarboxylic anhydrides, dicarboxylic acid, esters, and their corresponding acyl halides or (2) a mixture of said dicarboxylic acid reactant with up to 20 mole percent of a polycarboxylic acid reactant having a functionality greater than two based upon 100 mole percent of said dicarboxylic acid reactant and

(b) at least one polyhydric alcohol reactant comprising (1) a diol or (2) a mixture of a diol and up to 20 mole percent of a polyhydric alcohol having a functionality greater than two based upon 100 mole percent of said polyhydric alcohol,

wherein a minor effective proportion of said dicarboxylic acid reactant or polyhydric alcohol reactant is alpha,beta-ethylenically unsaturated and

II. an least one monovinyl monomer reactant comprising at least one monovinyl monomer having at least one carboxylic group or a mixture of said vinyl monomer with any monofunctional vinyl monomer.

4,225,682

SULFUR MODIFIED POLYCHLOROPRENE WITH IMPROVED STORAGE STABILITY

Hubert R. O'Neal, Houston, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Continuation of Ser. No. 686,378, May 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 591,289, Jun. 30, 1975, abandoned. This application May 22, 1978, Ser. No. 908,384

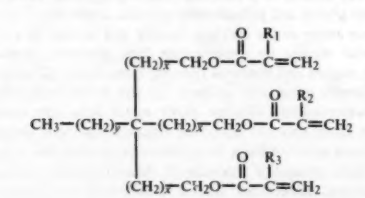
Int. Cl.[2] C08L *51/04*

U.S. Cl. 525—76 **13 Claims**

1. A polychloroprene sol-gel blend elastomer composition comprising an intimate mixture of:

a benzene-soluble polymer prepared by polymerizing polymerizable monomer comprising chloroprene in aqueous emulsion containing the chloroprene and 0.1 to 3 parts by weight elemental sulfur chain-transfer agent per 100 parts of monomer and peptizing the product of said polymerization with a peptizing agent containing the nucleus >[(N)(S)]≡C—S—, and

a benzene-insoluble polymer prepared by polymerizing polymerizable monomer comprising at least 50 percent polychloroprene having present in the polymerization system from about 0.5 to 20 weight percent, based on total monomers of a triester having the general formula:



wherein x is 0 or an integer of from 1 to 4, y is 0 or an integer of from 1 to 4, and R_1, R_2 and R_3 represent hydrogen or an alkyl radical with from 1 to 4 carbon atoms.

4,225,683

PROCESS FOR PRODUCING ELASTOMERS FROM HETERO-DISPERSE SYSTEMS BY CASTING FROM LIQUID MASS

Thies Timm, and Claus Hartwig, both of Hamburg, Fed. Rep. of Germany, assignors to Phoenix Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Feb. 28, 1979, Ser. No. 16,662

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808668

Int. Cl.[2] C08L *75/00*

U.S. Cl. 525—126 **5 Claims**

1. Process for producing elastomer materials which are abrasion resistant to heat, by reacting aliphatic or aromatic diisocyanates, low molecular polydiols or polydiamines and hydroxyl-containing polyesters or polyethers with a molecular weight between 800 and 5000, in equimolar quantities and in liquid phase, characterized by performing the reaction in the presence of rubber powder having diene units incorporated therein, the powder being dispersed in the reaction mass in an amount of 20%–50% by weight, the reaction being carried out in the presence of sulfur or a peroxide, and the rubber powder having a particle size between 5 and 500μ, the polyurethane reaction mass having a surplus of double bonds capable of cross-linking with the double bonds present in the uncured rubber powder.

4,225,684

HIGH IMPACT PVC COMPOSITIONS WITH CROSS-LINKED POLYESTER MODIFIERS

John C. Falk, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 29, 1979, Ser. No. 43,574

Int. Cl.[2] C08L *67/06*

U.S. Cl. 525—169 **2 Claims**

1. An improved PVC composition comprising from 90 to 75 wt% of a polymer of vinyl chloride and from 10 to 25 wt% of a cross-linked aliphatic polyester elastomer.

4,225,685

PREPARATION OF POLYMERIC ACETAL CARBOXYLATES USING ORGANOALUMINUM COMPOUNDS

David R. Dyroff, Creve Coeur, and Victor D. Papanu, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 18, 1979, Ser. No. 49,992

Int. Cl.[2] C08F *283/06;* **C08G** *6/00*

U.S. Cl. 525—401 **17 Claims**

1. A process which comprises:

(a) bringing together in a reaction zone under polymerization conditions an ester of glyoxylic acid and a polymerization initiator; and

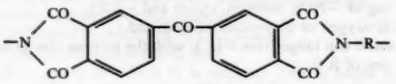
(b) adding to the resulting polymer in the presence of an organoaluminum compound an alkyl vinyl ether to stabilize the resulting polymer against rapid depolymerization in alkaline solution, the organoaluminum compound being selected from the group consisting of trialkyl aluminums, alkyl aluminum hydrides, alkyl aluminum alkoxides and alkyl aluminum halides in which the alkyl groups, alike or different, have 1 to about 10 carbon atoms each.

4,225,686
BLENDS OF COPOLYIMIDES WITH COPOLYAMIDEIMIDES

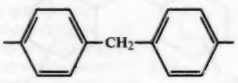
Kemal B. Onder, North Haven, and Frank P. Recchia, New Haven, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 19, 1979, Ser. No. 58,798
Int. Cl.[2] C08L *79/08*
U.S. Cl. 525—419 **11 Claims**

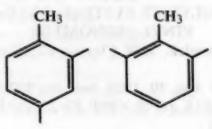
1. A polymer blend comprising (A) from about 10 to about 95 percent by weight of a copolyimide having the recurring units



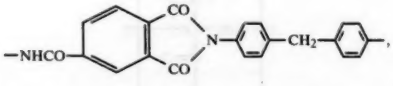
wherein from about 10 to about 30 percent of said recurring units are those in which R represents



and the remainder of said units are those in which R represents a member selected from the group consisting of



and mixtures thereof; and (B) from about 90 percent to about 5 percent by weight of a copolyamideimide having from about 70 to about 90 percent of the recurring units of the formula



and the remaining 30 to 10 percent of the recurring units of the formula

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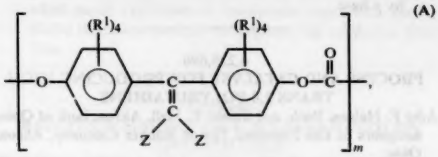
4,225,687
NOVEL HALOBISPHENOLETHYLENE POLYCARBONATE-POLYETHERAMIDE-IMIDE BLENDS

Pablo D. deTorres, Louisville, Ky., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,663
Int. Cl.[2] C08L *77/00*
U.S. Cl. 525—423 **11 Claims**

1. A polymer blend comprising:

(I) about 1–99 parts by weight of a polycarbonate containing halobis(phenyl)ethylene carbonate units of formula:



(A)

where independently each R^1 is hydrogen, chlorine, bromine or a C_{1-30} monovalent hydrocarbon or hydrocarbonoxy group, each Z is hydrogen, chlorine or bromine, subject to the proviso that at least one Z is chlorine or bromine, and m is an integer of at least 2, and

(II) about 99–1 parts by weight of a polyetheramide-imide.

4,225,688
COPOLYESTER COMPOSITION CONTAINING POLY(ETHYLENE CYCLOHEXANE DIMETHYLENE TEREPHTHALATE), HAVING SUPERIOR SOLVENT AND IMPACT RESISTANCE

T. Michael Dennehey, Arlington Heights, and Dwight Dixon, McHenry, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 9, 1978, Ser. No. 959,114
Int. Cl.[2] C08L *67/02*
U.S. Cl. 525—444 **7 Claims**

1. A copolyester composition which exhibits good bonding characteristics to polyvinyl chloride plastics, good impact resistance, and improved resistance to alcohols, which consists essentially of:

(a) from 80 to 95 percent by weight of a generally rigid poly(ethylene cyclohexanedimethylene terephthalate) in which from 2 to 20 molar parts of ethylene units are present per one molar part of cyclohexane dimethylene units; and

(b) from 5 to 20 percent by weight of flexible copolymer containing alternating covalently bonded blocks of poly(-butylene terephthalate) and poly(1,4-butylene oxide).

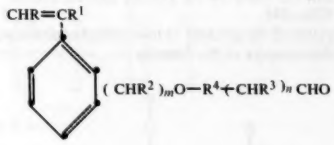
4,225,689
ALDEHYDE-CONTAINING VINYLARYL ETHERS

John C. Wilson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 26, 1978, Ser. No. 928,138
Int. Cl.[2] C08F *28/00, 4/04, 22/40, 216/34*
U.S. Cl. 526—75 **22 Claims**

1. An uncrosslinked polymer formed by free radical polymerization of:

(a) about 1 to about 99 mole percent of one or more monomers having the formula (I):



wherein:

R, R^1, R^2 and R^3 are independently hydrogen or alkyl containing from 1 to 4 carbon atoms;

R^4 is arylene containing 6 to 18 carbon atoms;

m is an integer from 1 to 4; and

n is an integer from 0 to 4; and

(b) about 1 to about 99 mole percent of one or more additional ethylenically unsaturated polymerizable monomers

having substituents which are susceptible to degradation by a base.

4,225,690

PROCESS AND CATALYST FOR PRODUCING HIGH TRANS 1,4-POLYBUTADIENE

Adel F. Halasa, Bath, and James E. Hall, Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 13, 1978, Ser. No. 960,514
Int. Cl. C08f *4/54*
U.S. Cl. 526—183 **22 Claims**

1. The process of polymerizing butadiene to a polymer having at least 80 percent trans-1,4 configuration comprising the addition of ROK and R_2Mg to butadiene dissolved in an aliphatic or cycloaliphatic hydrocarbon wherein R represents a hydrocarbyl radical of 1–20 carbon atoms; said R_2Mg being added in a proportion of 0.1–20 millimoles per one hundred grams of butadiene, said ROK being added in a proportion to give a K/Mg ratio in the range of 1.0/1 to 5/1; a temperature of −30° C. to 30° C. being maintained during said polymerization; and said polymerization being effected for a period of at least 30 minutes.

4,225,691

LOW TEMPERATURE CURABLE ORGANIC RESIN COMPOSITIONS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 962,997, Nov. 22, 1978, abandoned, which is a continuation-in-part of Ser. No. 861,127, Dec. 16, 1977, abandoned. This application Jul. 17, 1979, Ser. No. 58,318
Int. Cl.[2] C08F *4/44*
U.S. Cl. 526—192 **13 Claims**

1. A curable composition comprising by weight,
(A) a cationically polymerizable organic resin, and
(B) an effective amount of a curable composition of a catalyst consisting essentially of
(i) a diaryl iodonium salt
(ii) 0.1 to 10 parts, per part of (i) of a copper salt and
(iii) 0.5 part to 10 parts, per part of (i) of an organic or inorganic compound or polymer capable of lowering or reducing the change of the hetero atom of the diaryliodonium salt.

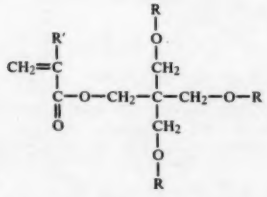
4,225,692

ELECTRON ACCEPTOR MONOMERS AND POLYMERS

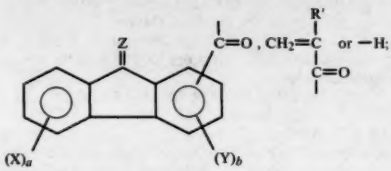
Sam R. Turner, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 615,664, Sep. 22, 1975, Pat. No. 4,050,934. This application May 4, 1977, Ser. No. 793,671
Int. Cl.[2] C08F *14/18, 214/18, 232/00, 236/00*
U.S. Cl. 526—244 **2 Claims**

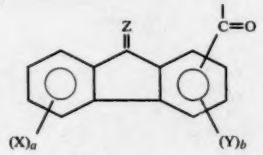
1. Polymers of the product of free radical addition polymerization of monomers of the formula



wherein R is



R′ is hydrogen or methyl;
X and Y are independently selected from the group consisting of $—NO_2$, halogen, cyano and $—CF_3$;
Z is oxygen or dicyanomethylene; and
a and b can range from 0 to 3; with the proviso that at least one of R is



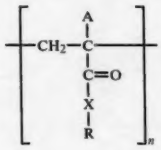
4,225,693

PESTICIDE-POLYMER SYSTEMS PREPARED FROM VINYL MONOMERS

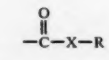
Charles L. McCormick, 2308 Clayton Pl., Hattiesburg, Miss. 39401

Filed Aug. 10, 1978, Ser. No. 932,724
Int. Cl.[2] A61K *31/78;* C08F *20/22, 20/34, 22/38*
U.S. Cl. 526—261 **6 Claims**

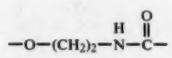
1. A pesticide-polymer which provides for the controlled release of the pesticide under conditions of use represented by the following formula:



in which A is selected from hydrogen, lower alkyl of 1 to 5 carbon atoms, halide, nitro and nitrile, n is 10 to 10 million and



is selected from
(a) a group containing an amide linkage in which X is selected from a single bond and



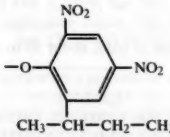
and R is a group obtained by removing an active hydrogen from an amino group of an amino containing compound selected from:
4-amino-6-tert=butyl-3-(methylthio)-as triazine-5(4H)one, 2-(ethylamine)-4(isopropylamino)-6-(methylthio-s-triazine)

3-amine-5-triazole
2-chloro-4-(ethylamino)-6-(isopropylamino)-s-triazine
3-amino-2,5-dichlorobenzoic acid
2-chloro-4-(cyclopropylamino)-6-(isopropylamino)-s-triazine
N^4,N^4-diethyl-a,a,a-trifluoro-3,5-dinitrotoluene-2,4-diamine
2-methoxy-4-ethylamino-6-sec-butylamino-s-triazine
4-amino-3,5-6-trichloropicolinic acid
2,4-bis(isopropylamino)-6-methoxy-s-triazine
2,4-bis(isopropylamino)-6-(methylthio)-s-triazine
2-chloro-4,6-bis(isopropylamino)-s-triazine
5-amino-4-chloro-2-phenyl-3(2H)-pyridazinone
2-chloro-4,6-bis(ethylamino)-s-triazine
2-chloro-4-ethylamino-6-tert-butylamino-s-triazine
2-methylthio-4-ethylamino-6-tert-butylamino-s-triazine
2-amino-3-chloro-1,4-naphthoquinone
2,4-dichloro-6(2-chloroanil-o)-1,3,5 triazine
3-amino-2,5-dichlorobenzoic acid;

(b) a group in which X is selected from a single bond, —NH—, —O—, —O—$(CH_2)_2$—NH-and —NH—$(CH_2)_2$—O— and R is a group obtained by removing a hydroxyl group from a carboxyl group of an acid selected from:

trichloroacetic acid
2,2-dichloropropionic acid
(2,4-dichlorophenoxy)acetic acid
4-(2,4-dichlorophenoxy)butyric acid
2-(2,4-dichlorophenoxy)propionic acid
(2,3,6-trichlorophenyl)acetic acid
2-methyl-4-chlorophenoxyacetic acid
(2,4,5-trichlorophenoxy)acetic acid
2,3,6-trichlorobenzoic acid
2,3,5-triiodobenzoic acid
2,2,3-trichloropropionic acid
2-(3-chlorophenoxy)propionic acid
2-(4-chlorophenoxy)propionic acid
2,3,6-trichlorobenzoic acid and
3,5,6-trichloro-2-methoxybenzoic acid; and

(c) a group in which X is a single bond and R is



4,225,694

SELECTIVE CATALYTIC OXIDATION OF UNSATURATED ALCOHOLS TO CARBONYL COMPOUNDS

Augustine I. Dalton, Jr., Allentown, Pa.; Henry J. Doran, Bray, Ireland, and Robert D. H. Murray, Glasgow, Scotland, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 616,260, Sep. 24, 1975, abandoned. This application Sep. 6, 1977, Ser. No. 830,405

Int. Cl.[2] **C07C** *51/32, 61/18, 63/06*

U.S. Cl. 562—506 **6 Claims**

1. Process for the oxidation of a primary unsaturated alcohol to its corresponding carboxylic acid wherein said primary alcohol is

(a) an olefinically unsaturated alcohol selected from the group consisting of straight chain alcohols, branched chain alcohols, and cycloalkyl containing alcohols; or

(b) an aromatically unsaturated alcohol which contains an aryl alkyl functionality, which comprises contacting the same with a catalytic quantity of a ruthenium catalyst from the group consisting of RuO_2 and A_2RuO_4 wherein A is an alkali metal cation in an amount of up to about 10 mols of said catalyst per 100 mols of said alcohol in an aqueous alkaline medium and with a substantially stoichiometric amount of an oxidizing agent selected from the group consisting of an alkali metal (per) halate and an alkali metal hypohalite to continually regenerate the A_2RuO_4 oxidation catalyst throughout the oxidation reaction.

4,225,695

RADIATION-HARDENABLE BINDERS BASED ON THIO-POLYOLS

Karl-Ernst Schuster, Kerken; Hans J. Rosenkranz, Krefeld; Hans Rudolph, Krefeld; Karl Fuhr, Krefeld; Bruno Zorn, Cologne, and Harro Träubel, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 15, 1978, Ser. No. 934,047

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737406

Int. Cl.[2] **C08G** *18/52, 18/62*

U.S. Cl. 528—75 **4 Claims**

1. A radiation-hardenable binder comprising a reaction product of a polyisocyanate, a hydroxyalkyl acrylate and a polyol, the reaction product having organically-bound sulphur incorporated therein in the form of thio or dithio or thio and dithio groups in an amount of from 0.01 to 10% by weight, based on the binder.

4,225,696

PROSTHETIC DENTURE PREPARED FROM POLYURETHANE ELASTOMER

Ralph W. Colpitts, Chesterfield, and Jens H. Wendt, Springfield, both of Mo., assignors to Polythetics, Inc., St. Louis, Mo.

Filed Feb. 21, 1979, Ser. No. 13,159

Int. Cl.[2] **C08G** *18/32;* **A61C** *13/00*

U.S. Cl. 528—76 **7 Claims**

1. An artificial denture fabricated from a hard, substantially non-hydrophilic polyurethane elastomer having a hardness of not less than about Shore D60, said hard elastomer consisting essentially of the reaction product of a polyether polyol and an aromatic polyisocyanate in which the isocyanate groups are bonded directly to the aromatic nucleus.

4,225,697

POLYPHOSPHAZENE POLYMERS CONTAINING DIALKYL ALKYLENE DIAMINO SUBSTITUENTS

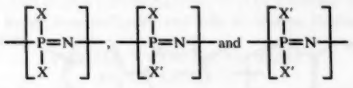
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Nov. 3, 1978, Ser. No. 957,397

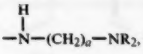
Int. Cl.[3] **C08G** *79/02, 73/00*

U.S. Cl. 528—168 **12 Claims**

1. A polyphosphazene polymer containing units represented by the formulas:



wherein X is



wherein R is an alkyl group of 1 to 8 carbon atoms and a is an integer of 2 to 8, and wherein X' is the same as X or is selected from the group consisting of substituted or unsubstituted alkoxy, aryloxy, amino and mercapto radicals, and wherein said polymer contains from 20 to 50,000 of said units.

4,225,698

OPTICAL COMPONENTS CONSISTING OF AROMATIC POLYESTERS MOLDED IN THE FORM OF AN OPTICAL LENS

Harald Medem; Dieter Freitag, both of Krefeld; Hans Hespe, Leverkusen, and Carl Heynemann, Taufkirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

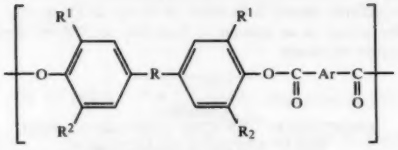
Filed Jan. 19, 1979, Ser. No. 4,706

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1978, 2802978

Int. Cl.[2] C08G 63/18

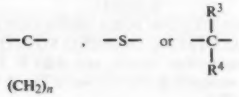
U.S. Cl. 528—176 4 Claims

1. An optical component consisting essentially of a thermoplastic aromatic polyester molded in the form of an optical lens, said polyester having a relative viscosity of from 1.18 to 1.42 when measured at 25° C. in methylene dichloride at a concentration of 5 g/l and comprising structural units corresponding to the formula

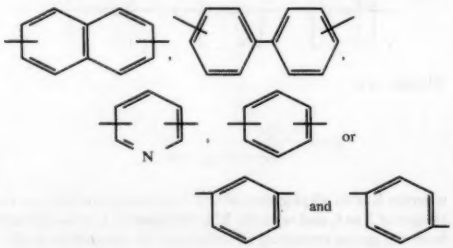


wherein R is

—O—, —CO—, —SO_2—, a bond,



R^1 and R^2 are selected from the group consisting of chlorine, methyl, hydrogen and bromine; R^3 and R^4 are selected from the group consisting of hydrogen, alkyl having 1 to 6 carbon atoms and aryl having 5 to 12 carbon atoms; n is an integer of from 4 to 11 and Ar is



in a molar ratio of from 30:70 to 70:30.

4,225,699

TERNARY POLYAMIDE FILAMENTS

Eduard Schmid, Bonaduz, and Wolfgang Griehl, Chur, both of Switzerland, assignors to Inventa AG für Forschung und Patentverwertung, Zurich, Zurich, Switzerland

Filed Jan. 6, 1978, Ser. No. 867,646

Claims priority, application Switzerland, Jan. 10, 1977, 230/77

Int. Cl.[2] C08G 69/14, 69/26

U.S. Cl. 528—324 3 Claims

1. An oriented, crystalline filament comprising a copolyamide which is derived from at least three polyamide-forming, unbranched, saturated, randomly distributed monomer components, having an average amide group frequency of one —CONH— to 6.4–7.4 —CH_2— and in which each of said monomer components is present in an amount of 10–60 mol %, based on the number of mols of all said components, and the sum of the mol % amounts of all monomer components is 100, said copolyamide having a melting point of less than 155° C.

4,225,700

THERMALLY STABLE ROD-LIKE POLYBENZOBISTHIAZOLE POLYMERS

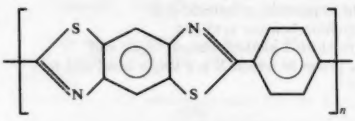
James F. Wolfe, Menlo Park, and Bock H. Loo, San Francisco, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Apr. 23, 1979, Ser. No. 32,539

Int. Cl.[3] C08G 69/32

U.S. Cl. 528—337 2 Claims

1. Poly{[benzo(1,2-d:4,5-d')bisthiazole-2,6-diyl]1,4-phenylene} having the structure



wherein n has a value of from about 50 to 100.

4,225,701

CRYSTALLINE POLYAMIDES FROM BRANCHED CHAIN DIAMINE AND TEREPHTHALIC ACID

Josef Pfeifer, Therwil, and Heinz Peter, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

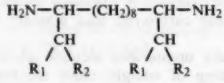
Filed Oct. 26, 1978, Ser. No. 954,811

Claims priority, application Switzerland, Oct. 28, 1977, 13146/77

Int. Cl.[2] C08G 69/26, 69/08

U.S. Cl. 528—347 7 Claims

1. A partially crystalline fiber-forming polyamide of essentially stoichiometric amounts of (1) terephthalic acid, or of an amide-forming derivative thereof, with (2) a diamine of the formula (I)



(I)

in which

R_1 is alkyl having 1–4 C atoms,

R_2 is alkyl having 1–8 C atoms, or

R_1 and R_2 together with the linkage C atom to which they are attached are in both cases cycloalkyl having 4–6 C atoms,

(3) from zero to 5% by weight of an aminocarboxylic acid of the formula (II)

$$HOOC—Z_1—NH_2 \quad (II)$$

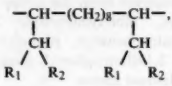
in which Z_1 is alkylene having 5 to 11 C atoms, or of a corresponding lactam, or (4) zero to 30% by weight of an essentially stoichiometric mixture of a dicarboxylic acid of the formula (III)

$$HOOC—Z_2—COOH \quad (III)$$

in which Z_2 is an aliphatic radical having at least 2 C atoms, or a carbocyclic-aromatic radical in which the carbonyl groups are bound to different ring C atoms which are not adjacent, or of an amide-forming derivative thereof, with a diamine of the formula (IV)

$$H_2N—Z_3—NH_2 \quad (IV)$$

in which Z_3 is



straight-chain alkylene having 2–12 C atoms, or a cycloaliphatic or araliphatic radical; and wherein the defined weight percentages in the case of amide-forming derivatives of terephthalic acid and of the dicarboxylic acid of the formula (III) relate to identical functional groups.

4,225,702
METHOD OF PREPARING POLYAMIDE ACID TYPE INTERMEDIATES FOR PROCESSING OF SEMICONDUCTORS

Daisuke Makino, Hitachi; Yasuo Miyadera, Shimodate; Seiki Harada, and Atsushi Saiki, both of Kokubunji, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Feb. 1, 1979, Ser. No. 8,408

Claims priority, application Japan, Feb. 9, 1978, 53-13773

Int. Cl.[2] **C08G** *73/10*

U.S. Cl. 528—353 **2 Claims**

1. A method of preparing a polyamide acid type intermediate for processing of semiconductors by reacting at least one compound selected from the group consisting of diamine and diaminoamide compounds, and a tetracarboxylic acid dianhydride, as monomer compounds, the improvement comprises using (A) an inert solvent purified by distillation or ion-exchange, and (B) said monomer compounds having been purified to have reduced contents of ionic impurities and free acid by recrystallization comprising dissolving each monomer being purified in a solvent which is heated, then filtering and cooling the filtrate to precipitate purified monomer.

4,225,703
PROCESS FOR THE PRODUCTION OF OXYMETHYLENE COPOLYMER MOLDING COMPOSITIONS WITH A LOW CONTENT OF RESIDUAL FORMALDEHYDE

Herbert Amann; Gerhard Morlock, both of Hanau, and Hellmut Trautwein, Hasselroth, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,766

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840679

Int. Cl.[3] **C08G** *2/28*

U.S. Cl. 528—480 **5 Claims**

1. A process for the production of oxymethylene copolymerizate molding compositions having a small portion of residual formaldehyde comprising heating the polymerizate melt treated with chemical stabilizers in an apparatus in which there are continuously presented new polymerizate surfaces under reduced pressure, said heating being carried out in a thin layer evaporator for highly viscous media at an average residence time of 30 to 120 seconds, at a rate of shear between 500 and $2000s^{-1}$ and at a pressure P_{abs} of not over 150 mbar and drawing off the escaping gases countercurrent to the polymerizate melt.

4,225,704
PREPARATION OF HALOGENOVINYL-SUBSTITUTED TETRA-HYDROFURAN-2-ONES

Hans-Georg Heine, Krefeld; Armin Hübner, Toenisvorst, and Willy Hartmann, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

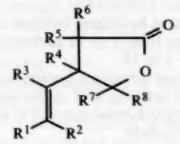
Filed Aug. 25, 1978, Ser. No. 936,988

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740849

Int. Cl.[2] **C07D** *307/20*

U.S. Cl. 542—441 **11 Claims**

1. A process for the preparation of a halogenovinyl-substituted tetrahydrofuran-2-one of the formula



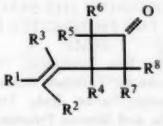
in which

R^1, R^2, R^3 and R^5 each independently is hydrogen, chlorine, bromine, fluorine, cyano, alkyl, alkenyl, cycloalkyl, aryl or aralkyl and

R^4, R^6, R^7 and R^8 each independently is hydrogen, alkyl, alkenyl, cycloalkyl, aryl or cyano, or

R^5 and R^6, and/or R^4 and R^5, and/or R^4 and R^6, and/or R^7 and R^8, with the atoms to which they are linked, form a ring, at least one of the radicals R^1, R^2 and R^3 being fluorine, chlorine or bromine,

comprising reacting a peracid with a halogenovinyl-substituted cyclobutanone of the formula



4,225,705
PROCESS FOR SYNTHESIZING THIACYANINE DYES

Henry Bader, Newton Center, and John W. Sparks, Boston, both of Mass.

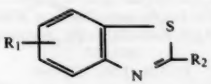
Filed May 7, 1979, Ser. No. 36,283

Int. Cl.[3] **C07D** *417/06*

U.S. Cl. 542—452 **13 Claims**

1. A process for preparing a thiacyanine dye comprising the steps of

(a) reacting a benzothiazole represented by the formula



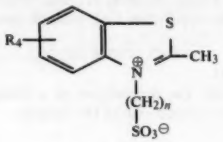
wherein R_1 may be hydrogen, halogen, or alkyl, alkoxy or

haloalkyl having from 1 to 12 carbon atoms; and R_2 may be halogen, alkoxy having from 1 to 6 carbon atoms or aryloxy

dissolved in an aprotic solvent with an alkylating agent, selected from the group consisting of alkyl fluorosulfonates, alkyl trifluoromethanesulfonates and trialkyloxonium fluoroborates, wherein each alkyl group of said alkylating agents has from 1 to 18 carbon atoms, to form a quaternized benzothiazole and, without isolating said quaternized benzothiazole;

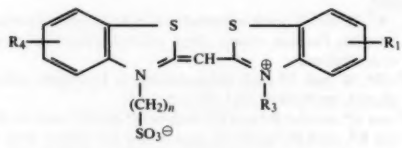
(b) adding a condensation agent to the quaternized benzothiazole reaction medium; and

(c) adding to said reaction medium a solution of a benzothiazolium betaine represented by the formula



wherein R_4 may be hydrogen, halogen or alkyl, alkoxy or haloalkyl having from 1 to 12 carbon atoms and n is an integer of from 1 to 18

in a first protic solvent wherein a homogeneous reaction medium is formed and reacting said quaternized benzothiazole and said benzothiazolium betaine to form a thiacyanine dye represented by the formula



wherein R_3 is alkyl having from 1 to 18 carbon atoms.

4,225,706

POLYCHALCOGEN ESTER OF CEPHEM COMPOUND, PROCESS FOR PREPARING THE SAME AND METHOD FOR REMOVING THE PROTECTIVE GROUP OF THE SAME

Shigeo Seki, Tokyo; Ken Nishihata, Yokohama; Satoru Nakabayashi, Yokohama; Toshinori Saito, Yokohama; Hitoshi Ikeda, Kawasaki; Nobuo Itoh, Yokohama; Shokichi Nakajima, Machida, and Shunzo Fukatsu, Tokyo, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

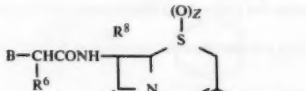
Filed Apr. 21, 1978, Ser. No. 898,613

Claims priority, application Japan, May 4, 1977, 52-50688; May 4, 1977, 52-50689; Aug. 31, 1977, 52-103562

Int. Cl.[2] C07D *501/04, 501/22, 501/34, 501/26*

U.S. Cl. 544—16 **7 Claims**

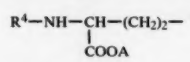
1. An ester of a cephem compound represented by the formula:



wherein

A is selected from the group consisting of β-methoxyethoxymethyl, β-methoxyethoxyethyl, β-ethoxyethoxymethyl, β-ethoxyethoxy-ethyl, β-propyloxyethoxymethyl, β-isopropyloxyethoxymethyl, β-t-butoxyethoxymethyl, β-phenoxyethoxymethyl, β-benzyloxyethoxymethyl, β-methoxy-β-methylethoxymethyl, γ-methoxypropyloxymethyl, β-methylthioethylthiomethyl and β-methoxyethylthiomethyl;

B is selected from the group consisting of cyano, cyanomethylthio, trifluoromethylthio, phenyl, tolyl, chlorophenyl, bromophenyl, methoxyphenyl, hydroxyphenyl, phenoxy, tolyloxy, chlorophenoxy, bromophenoxy, methoxyphenoxy, hydroxyphenoxy, benzyl, methyl-benzyl, chlorobenzyl, α-phenethyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 1H-tetrazolyl, 4-pyridylthio, and



wherein R^4 is selected from the group consisting of methoxycarbonyl, ethoxycarbonyl, 5-butoxycarbonyl, benzoyl, p-chlorobenzoyl, phthaloyl, carbobenzoxy, chloroacetyl, 2,4-dinitrophenyl, phenylacetyl, and A is the same as defined above;

R^6 is selected from the group consisting of hydrogen, hydroxyl, benzoyl amino, p-chlorobenzoyl amino, phthalimido, t-butoxycarbonyl amino, carbobenzoxyamino;

R^7 is selected from the group consisting of a hydrogen atom, acetoxy, propionyloxy, pyridyl, carbamoylpyridyl, acetylaminopyridyl, methylthiopyridyl, methylthio, ethylthio, 1,3,4-thiadiazolylthio, 2-methyl-1,3,4-thiadiazolylthio, 1-methyl-tetrazolylthio, 1,2,3-triazolylthio, and 1,3,4-oxadiazolylthio;

R^8 is hydrogen or a methoxy group; and

Z is 0 or 1.

4,225,707

2-LOWER ALKYL-7-SUBSTITUTED-2 OR 3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takashi Kamiya, Suita, and Takao Takaya, Sakai, both of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

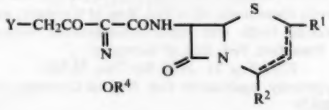
Division of Ser. No. 836,909, Sep. 26, 1977, Pat. No. 4,152,433, which is a continuation-in-part of Ser. No. 808,615, Jun. 21, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,886

Claims priority, application United Kingdom, Jun. 28, 1976, 26740/76; Jan. 5, 1977, 262/77

Int. Cl.[2] C07D *501/20*

U.S. Cl. 544—16 **4 Claims**

1. A compound of the formula:



wherein

R^1 is lower alkyl,

R^2 is carboxy or a carboxyl group protected by an eliminatable protective group,

R^4 is hydrogen or lower alkyl and

Y is halogen, or a salt thereof.

4,225,708

2-SULFAMOYL-5-SULFAMIDO-1-NAPHTHOLS

Masaru Kanbe; Kazumasa Watanabe; Morito Uemura; Jiro Takahashi; Ryuichiro Kobayashi, and Tatsuhiko Kobayashi, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

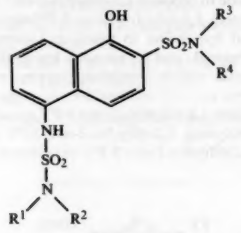
Filed Aug. 22, 1979, Ser. No. 68,518

Claims priority, application Japan, Aug. 31, 1978, 53-106464

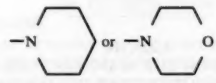
Int. Cl.[2] C07D *245/12;* **C07C** *143/78*

U.S. Cl. 544—159 **12 Claims**

1. A compound represented by the formula:



wherein R^1, R^2 R^3 and R^4, which may be the same or different, independently represent a hydrogen atom, a straight-chain alkyl group having 1 to 6 carbon atoms, a branched alkyl group having 3 to 6 carbon atoms or a cycloalkyl group having 5 to 6 carbon atoms or R^1 and R^2 may be connected with each other, together with the nitrogen atom, to form a



group.

4,225,709

PRODUCTION OF 2,4-DIFLUORO-6-AMINO-S-TRIAZINE

Gert Hegar, Schönenbuch, and Henri Riat, Arlesheim, both of Switzerland, assignors to Ciba-Geigy, AG, Basel, Switzerland

Filed Jan. 8, 1979, Ser. No. 1,574

Claims priority, application Switzerland, Jan. 18, 1978, 516/78

Int. Cl.[2] C07D *251/44*

U.S. Cl. 544—194 **5 Claims**

1. A process for the production of 2,4-difluoro-6-amino-s-triazine, which comprises reacting cyanuric fluoride, in aqueous solution, with ammonia or an ammonium salt, at a temperature between $-5°$ and $+10°$ C. and a pH value between 7.25 and 9.

4,225,710

PYRIMIDO(4,5-c)PYRIDAZINES

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

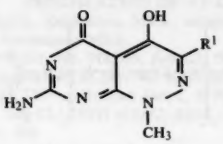
Filed Jul. 7, 1978, Ser. No. 922,545

Claims priority, application United Kingdom, Jul. 8, 1977, 28765/77

Int. Cl.[2] A61K *31/505;* **C07D** *487/04*

U.S. Cl. 544—236 **14 Claims**

1. A compound of the formula (II):



(II)

or a tautomer, or a pharmaceutically acceptable salt thereof, wherein R^1 is:

lower alkyl;

hydroxymethyl;

phenyl;

carboxy;

benzyl;

benzyl substituted in the phenyl ring with nitro or lower alkoxy;

phenacyl;

phenacyl substituted in the phenyl ring with hydroxy or lower alkoxy;

a carboxylic acid acyloxymethyl of from 1 to 6 carbon atoms arranged in a straight or branched chain;

indolyl;

indolyl methyl;

$CH(CN)CH_2C_6H_5$;

$CH(CN)CH_2C_6H_5$ substituted in the phenyl ring with lower alkoxy; or

$CH(Y)CO_2Z$ or $CH_2CH_2CO_2Z$ in which Y is hydrogen or lower alkyl or alkoxy and Z is hydrogen or lower alkyl.

4,225,711

SUBSTITUTED 2-[(METHYLSULFINYL)ACETYL]-3-HETEROCYCLICINDOLES AND THEIR USE AS IMMUNOSUPPRESSANTS

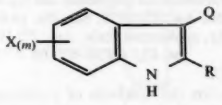
Martin Steinman, Livingston, and Pirouz Tahbaz, Cedar Grove, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 2, 1978, Ser. No. 947,979

Int. Cl.[3] C07D *403/04;* **A61K** *31/50*

U.S. Cl. 544—238 **8 Claims**

1. A compound of the formula



wherein X is halogeno, (n) is an integer of zero to three, R is methylsulfinylacetyl, methylsulfonylacetyl, methylthihydroxyacetyl, methylthioloweralkoxyacetyl, methylsulfinylhydroxyethyl or methylsulfonylhydroxyethyl and Q is pyrimidinyl, pyridazinyl or pyrazinyl.

4,225,712

TETRAHYDROPYRIMIDYL-SUBSTITUTED COMPOUNDS

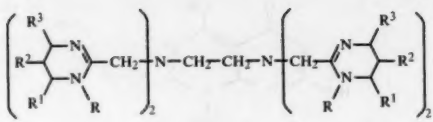
Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 845,700, Oct. 26, 1977, which is a continuation-in-part of Ser. No. 610,761, Sep. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 431,831, Jan. 7, 1974, abandoned. This application Jun. 29, 1978, Ser. No. 920,436

Int. Cl.[2] C07D *403/14*

U.S. Cl. 544—296 **4 Claims**

1. A compound of the formula



wherein R, R^1, R^2 and R^3 are independently hydrogen or radicals composed primarily of carbon and hydrogen and containing from 1 to about 50 carbon atoms.

4,225,713

TETRAHYDRO(1H)PYRAZINO(1,2-a)AZAQUINOXALIN-5(6H)-ONES AND DERIVATIVES THEREOF

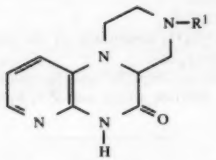
Meir E. Freed, 632 Arch St., Spring City, Pa. 19475 and John R. Potoski, 137 Cedar Hollow Rd., Paoli, Pa. 19301

Division of Ser. No. 821,381, Aug. 3, 1977, Pat. No. 4,138,564. This application Nov. 3, 1978, Ser. No. 957,508

Int. Cl.[2] C07D *471/14*

U.S. Cl. 544—346 **4 Claims**

1. A compound of the formula:



wherein R′ is hydrogen, methyl, ethyl, propyl, or isopropyl; or a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,225,714

PROCESS FOR PREPARING P-CHLOROPHENOXY-ACETYL-PIPERONYLPIPERAZINE HYDROCHLORIDE

Gian P. Gardini, Parma; Giancarlo Scapini, Bologna; Armando Raimondi, Anagni, and Placido Poidomani, Rome, all of Italy, assignors to Farmaceutici Geymonat Sud S.p.A., Anagni, Italy

Filed Apr. 27, 1979, Ser. No. 34,041

Claims priority, application Italy, Apr. 27, 1978, 67952 A/78

Int. Cl.[2] C07D *405/06*

U.S. Cl. 544—377 **7 Claims**

1. A process for the synthesis of p-chlorophenoxyacetylpiperonylpiperazine hydrochloride (I), which comprises reacting substantially pure 1,4-bis-piperonylpiperazine with the chloride of p-chlorophenoxyacetic acid.

4,225,715

PREPARATION OF 3-AMINO(OR CARBAMYL)-5-(PYRIDINYL)-2(1H)-PYRIDINONES

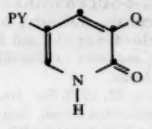
George Y. Lesher, and Chester J. Opalka, Jr., both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 937,120, Aug. 28, 1978, Pat. No. 4,137,233, which is a division of Ser. No. 876,571, Feb. 10, 1978, Pat. No. 4,137,233, which is a division of Ser. No. 818,724, Jul. 25, 1977, Pat. No. 4,107,315, which is a continuation-in-part of Ser. No. 707,235, Jul. 21, 1976, Pat. No. 4,072,746, which is a continuation-in-part of Ser. No. 621,763, Oct. 14, 1975, Pat. No. 4,004,012. This application Jun. 20, 1979, Ser. No. 50,507

Int. Cl.[2] C07D *213/56*

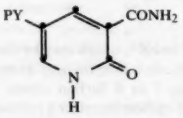
U.S. Cl. 546—257 **9 Claims**

1. The process for preparing a 3-Q-5-PY-2(1H)pyridinone having the formula



where PY is 4- or 3- or 2-pyridinyl or 4- or 3- or 2-pyridinyl having one or two lower-alkyl substituents, and Q is carbamyl or amino, which comprises reacting α-PY-β-(R_1R_2N)acrolein with malonamide to produce 1,2-dihydro-2-oxo-5-PY-nicotinamide and reacting 1,2-dihydro-2-oxo-5-PY-nicotinamide with an alkali metal hypohalite to produce 3-amino-5-PY-2(1H)-pyridinone, where R_1 and R_2 are each lower-alkyl.

7. The process which comprises reacting either α-PY-β-(R_1R_2N)acrolein or α-PY-malonaldehyde with α-cyanoacetamide to produce 1,2-dihydro-2-oxo-5-PY-nicotinonitrile and partially hydrolyzing 1,2-dihydro-2-oxo-5-PY-nicotinonitrile to produce 1,2-dihydro-2-oxo-5-PY-nicotinamide having the formula



where PY is 4- or 3- or 2-pyridinyl or 4- or 3- or 2-pyridinyl having one or two lower-alkyl substituents, and R_1 and R_2 are each lower-alkyl.

4,225,716

PROCESS FOR THE MANUFACTURE OF 2,6-DICHLOROPYRIDINE DERIVATIVES

Ulrich Bühler, Schöneck, and Ernst Heinrich, Neu-Isenburg, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

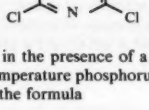
Filed Jan. 31, 1979, Ser. No. 7,993

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814330

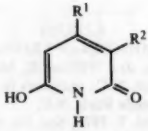
Int. Cl.[2] C07D *213/55, 213/57*

U.S. Cl. 546—286 **5 Claims**

1. In the process for the manufacture of a compound of the formula



comprising reacting in the presence of a basic nitrogen compound at elevated temperature phosphorus oxychloride with a hydroxypyridine of the formula



wherein

R^1 is hydrogen, alkyl having 1 to 8 carbon atoms, phenyl, carbalkoxy having 2 to 5 total carbon atoms, carbalkoxymethyl having 3 to 6 total carbon atoms or substituted

phenyl having a substituent selected from the group consisting of chloro, bromo, methyl, ethyl, methoxy, ethoxy, cyano and nitro and

R^2 is hydrogen, cyano, nitro or acetyl, the improvement comprises the molar ratio of phosphorus oxychloride to hydroxypyridine being 1:1 to 1.3:1.

4,225,717
2-HYDRAZINO-3-PYRIDINOL-1-OXIDE HYDROBROMIDE

George C. Wright, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 9, 1979, Ser. No. 56,025
Int. Cl.[2] C07D *211/94*
U.S. Cl. 546—306 **1 Claim**

1. The compound 2-hydrazino-3-pyridinol-1-oxide hydrobromide.

4,225,718
PROCESS FOR RECOVERING 2,3,5,6-TETRACHLOROPYRIDINE

Donald J. Perettie, and Norman L. Dean, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 909,610, May 25, 1978, abandoned, which is a continuation of Ser. No. 806,037, Jun. 13, 1977, abandoned. This application Feb. 22, 1979, Ser. No. 14,385
Int. Cl.[2] C07D *213/04*
U.S. Cl. 546—345 **7 Claims**

1. A process for recovering 2,3,5,6-tetrachloropyridine from a first mixture containing initially 2,3,5,6-tetrachloropyridine, pentachloropyridine and at least one of 2,3,4,5-tetrachloropyridine and 2,3,4,6-tetrachloropyridine and no more than minor amounts, if any, of monochloropyridines, 3,5-dichloropyridine, 2,3,5-trichloropyridine and 2,3,6-trichloropyridine and no other chloropyridine compounds which comprises the steps of (a) reacting by contacting said first mixture of chlorinated pyridines at a temperature of from about 150° C. to about 300° C., in liquid phase, under atmospheric or superatmospheric pressure, with chlorine, in the presence of a small but catalytic amount of a Lewis acid catalyst whereby most of the 2,3,5,6-tetrachloropyridine does not undergo further chlorination while most if not all of the 2,3,4,5- and/or 2,3,4,6-tetrachloropyridine undergoes further chlorination to pentachloropyridine, to thereby obtain a second mixture of chlorinated pyridines consisting essentially of 2,3,5,6-tetrachloropyridine and pentachloropyridine, and (b) distilling said second mixture to recover the 2,3,5,6-tetrachloropyridine therefrom.

4,225,719
PROCESS FOR PREPARING 2-AMINO-5-FORMYLTHIAZOLE AND ITS HYDROBROMIDE SALT

Mark D. Frishberg, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,285
Int. Cl.[2] C07D *277/20*
U.S. Cl. 548—194 **4 Claims**

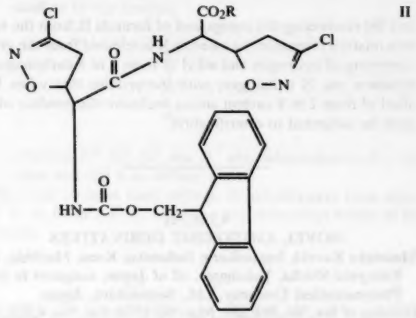
1. Process for the preparation of 5-formyl-2-aminothiazole hydrobromide which comprises reacting bromomalonaldehyde and thiourea in the substantial absence of added acids or bases.

4,225,720
PURIFICATION OF AT-125

David G. Martin, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 918,569, Jun. 23, 1978, which is a continuation-in-part of Ser. No. 906,028, May 15, 1978, abandoned. This application Jan. 2, 1979, Ser. No. 634
Int. Cl.[3] C07D *413/12*; A61K *31/42*
U.S. Cl. 548—240 **4 Claims**

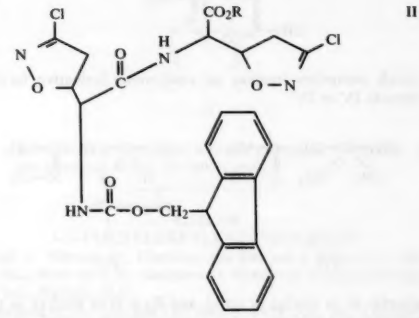
1. A compound having the formula



II

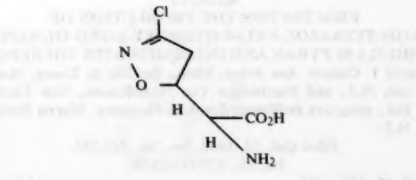
wherein R is selected from the group consisting of hydrogen and alkyl of from 1 to 8 carbon atoms, inclusive.

3. A process for preparing a compound having the formula

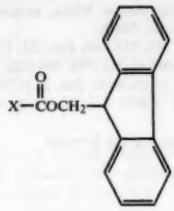


II

which comprises (a) reacting a compound having the formula



with a compound having the formula



and (b) recovering the compound of formula II from the reaction mixture formed in (a) wherein R is selected from the group consisting of hydrogen and alkyl of from 1 to 8 carbon atoms, inclusive and X is halogen, with the proviso that when R is alkyl of from 1 to 8 carbon atoms, inclusive the product of (b) must be subjected to esterification.

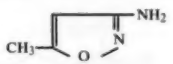
4,225,721

NOVEL AMIDOXIME DERIVATIVES

Masataka Kuroki, Sagamihara; Sadamitsu Kono, Machida, and Kazuyuki Shioka, Yokohama, all of Japan, assignors to Sogo Pharmaceutical Company, Ltd., Sagamikara, Japan

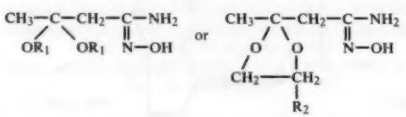
Division of Ser. No. 885,257, Mar. 10, 1978, Pat. No. 4,152,336.
This application Sep. 21, 1978, Ser. No. 944,301
Claims priority, application Japan, Nov. 9, 1977, 52/133621
Int. Cl.[3] C07D *261/14*
U.S. Cl. 548—246 **2 Claims**

1. A method for preparing 3-amino-5-methylisoxazole having the formula



(V)

which comprises treating an amidoxime derivative having formula IV or IV'



(IV) (IV')

wherein R_1 is methyl or ethyl, and R_2 is H or methyl, in the presence of a mineral acid in a polar solvent to obtain in one stage said 3-amino-5-methylisoxazole.

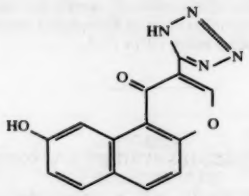
4,225,722

PROCESS FOR THE PRODUCTION OF 2-(1H-TETRAZOL-5-YL)-9-HYDROXY-1-OXO-1H-NAPHTHO-(2,1-B) PYRAN AND INTERMEDIATES THEREFOR

David T. Connor, Ann Arbor, Mich.; Patricia A. Young, Madison, N.J., and Maximilian Von Strandtmann, New Castle, Del., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 13, 1977, Ser. No. 841,782
Int. Cl.[3] C07D *405/04*
U.S. Cl. 548—253 **4 Claims**

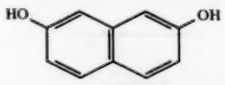
1. A process for preparing a compound of the formula 9:



9.

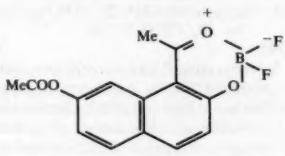
which comprises the steps of:

(A) dissolving a compound of the formula 1:



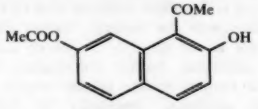
1.

in a sufficient amount of acetic anhydride to form a solution, adding boron trifluoride etherate and refluxing for at least 4 hours to obtain a compound of the formula 2:



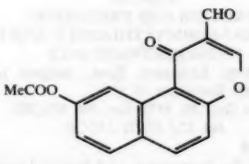
2.

(B) after isolation, reacting compound 2 with hydrochloric acid to obtain a compound of the formula 4:



4.

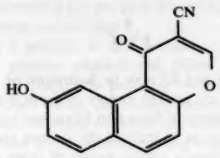
(C) after isolation, treating Compound 4 with a Vilsmeier reagent prepared from phosphorous oxychloride and dimethylformamide, followed by hydrolysis to obtain compound 5:



5.

(D) after isolation, refluxing Compound 5 with hydroxylamine hydrochloride and sodium formate in formic acid to obtain Compound 8:

8.



(E) after isolation, adding aluminum chloride to a suspension of Compound 8 and sodium azide in tetrahydrofuran, refluxing for from about 16 to about 30 hours and acidifying to obtain Compound 9.

4,225,723

PROCESS FOR THE PREPARATION OF SUBSTITUTED ARYLCYANOALKYL AND DIARYL CYANOALKYLIMIDAZOLES

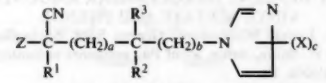
George A. Miller, Maple Glen; Hak-Foon Chan, Doylestown, and Harold E. Carley, Chalfont, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 839,877, Oct. 6, 1977, Pat. No. 4,143,137, which is a division of Ser. No. 647,039, Jan. 7, 1976, Pat. No. 4,073,921, which is a continuation-in-part of Ser. No. 557,546, Mar. 12, 1975, abandoned. This application Jan. 8, 1979, Ser. No. 1,658

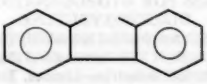
Int. Cl.[2] C07D *233/90*

U.S. Cl. 548—341 13 Claims

1. A process for the preparation of a compound of the formula:

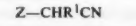


wherein Z is (C_6-C_{10}) aryl or (C_6-C_{10}) aryl substituted with up to 3 substituents independently selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, methoxy, ethoxy, methyl, ethyl, propyl, butyl, trihalomethyl, phenyl and benzoyl; R^1 is (C_1-C_{20}) alkyl, (C_3-C_8) cycloalkyl, (C_3-C_8) alkenyl, (C_5-C_8) cycloalkenyl, (C_3-C_6) alkynyl, phenyl, benzyl or phenethyl or phenyl, benzyl or phenethyl substituted with up to three substituents independently selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, methoxy, ethoxy, methyl, ethyl and trihalomethyl; R^2 and R^3 are independently hydrogen, (C_1-C_{20}) alkyl, phenyl, benzyl or phenethyl or phenyl, benzyl or phenethyl substituted with up to three substituents independently selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, methoxy, ethoxy, methyl, ethyl and trihalomethyl, or when taken together form (C_4-C_8) cycloalkyl; R^1 and Z when taken together form the group



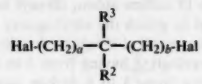
a is 0 to 5; b is 0 to 5; X is halogen; and c is 0 to 2, which comprises reacting

(I) a molar equivalent of a benzylcyanide of the formula



wherein Z and R^1 are as defined above, and

(II) about a molar equivalent amount of a dihaloalkane of the formula

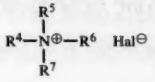


wherein R^2, R^3, a and b are as defined above and Hal is chlorine, bromine or iodine in the presence of

(1) about a molar equivalent amount of sodium hydride;

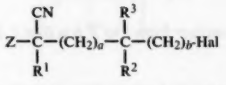
(2) about a molar equivalent amount of a 50% solution of NaOH; or

(3) a catalytic amount of a quaternary ammonium halide catalyst of the formula



wherein R^4, R^5, R^6 and R^7 are independently (C_1-C_4) alkyl and Hal is as defined above;

either neat or in an inert solvent, at temperatures from about 20° C. to about 160° C. to form a arylcyanoalkyl halide of the formula



then reacting a molar equivalent of said arylcyanoalkylhalide and

(III) about a molar equivalent of an imidazole or an alkali metal salt thereof having the formula

wherein Q is hydrogen, sodium, potassium or lithium, in the presence of (1), (2) or (3) above.

4,225,724

1-(2-PHENYLUREYLENE)IMIDAZOLES

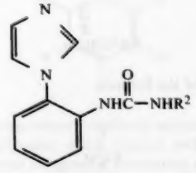
Paul L. Warner, Jr., Clarence, and Edward J. Luber, Jr., Buffalo, both of N.Y., assignors to Westwood Pharmaceuticals, Inc., Buffalo, N.Y.

Division of Ser. No. 858,515, Dec. 8, 1977, Pat. No. 4,160,097, which is a continuation-in-part of Ser. No. 757,640, Jan. 7, 1977, abandoned. This application Mar. 5, 1979, Ser. No. 17,310

Int. Cl.[3] C07D *233/61*

U.S. Cl. 548—346 12 Claims

1. A 1-(2-phenylureylene)imidazole of the formula:



wherein: R^2 is a radical bonded to the nitrogen by a carbon to

nitrogen linkage and is selected from the group consisting of alkyl of from 1 to 17 carbon atoms, alkenyl having 16 carbon atoms, alkoxyalkyl in which the alkyl moiety has from 1 to 4 carbon atoms, halogenoalkyl in which the alkyl has from 1 to 2 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, cycloalkenyl having from 5 to 6 carbon atoms, 1-naphthyl, 2-naphthyl, phenoxymethyl, benzyl and styryl.

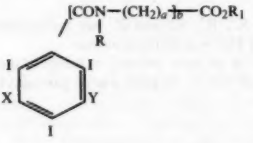
4,225,725

LOWER ALKOXYMETHYL ESTERS OF 2,4,6-TRIIODOBENZOIC ACID DERIVATIVES

George B. Hoey, Ferguson, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Oct. 20, 1975, Ser. No. 624,011
Int. Cl.[2] C07C *103/46, 103/76, 103/84*
U.S. Cl. 560—37 **4 Claims**

1. A compound represented by the following formula:



wherein a is an integer from 1 to 3, b is 0 or 1, R is phenyl, R_1 is

wherein R_2 is hydrogen and R_3 is lower alkyl and X and Y are individually nonionizing functions compatible with low toxicity and/or water solubility in the 2,4,6-triiodophenyl configuration selected from the group consisting of hydrogen, lower acylamino, carbamyl, N-(lower alkyl)carbamyl and amino at least one of X and Y being other than hydrogen.

4,225,726

CATALYTIC CONDENSATION OF ALDEHYDES TO 1,3-GLYCOL MONOESTERS

Don L. Morris, and Anthony W. McCollum, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1979, Ser. No. 41,833
Int. Cl.[2] C07C *67/44*
U.S. Cl. 560—238 **7 Claims**

1. A process for manufacturing 1,3-glycol monoesters wherein a molecule of each of the aldehydes A, B and C is reacted in the presence of a catalyst consisting of metallic tin or stannous oxide at a temperature of from about 70° C. to about 180° C. and a pressure at least sufficient to maintain the aldehydes in a liquid phase wherein A is an aldehyde of the formula

B is an aldehyde of the formula

and C is an aldehyde of the formula

wherein R, R^1, R^2 and R^3 may be hydrogen or a straight or branched alkyl or cycloalkyl moiety of from 1 to 20 carbon atoms or an aryl moiety of from 6 to 10 carbon atoms or R and R^1 may be joined so as to include the carbon atom to which they are attached into a cyclic group of from 6–10 carbon atoms.

4,225,727

PROCESS FOR THE PRODUCTION OF UNSATURATED ESTERS

Setsuo Kamiyama, Kawagoe; Kouji Shiozawa, Okegawa; Yoshiharu Okumura, Kawagoe, and Katsumi Kaneko, Ooi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1979, Ser. No. 82,004
Int. Cl.[3] C07C *67/055*
U.S. Cl. 560—244 **8 Claims**

1. In a process for the production of an unsaturated ester which comprises reacting a conjugated diene compound, a carboxylic acid and molecular oxygen in the presence of a solid catalyst containing (a) palladium and (b) tellurium, the improvement which comprises including in the catalyst (c) at least one of Group IV elements of the Periodic Table selected from the group consisting of tin, germanium and lead.

4,225,728

CATALYTIC PROCESS FOR THE CONVERSION OF ETHYL BENZENE TO EQUIMOLAR AMOUNTS OF VINYL ACETATE AND PHENOL

James E. Lyons, Wallingford; George Suld, Springfield, and Robert W. Shinn, Aston, all of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Nov. 3, 1978, Ser. No. 957,274
Int. Cl.[2] C07C *69/15, 67/28, 39/04, 37/00*
U.S. Cl. 560—261 **21 Claims**

1. A process for the oxidation of ethyl benzene to form vinyl acetate and phenol which comprises:

(a) oxidizing ethyl benzene with air or oxygen in the liquid phase at temperatures of from 140°–300° C. and at elevated pressures in the presence of a strong acid catalyst, acetic anhydride, and molybdenum trioxide to form phenyl acetate and ethylidene diacetate in approximately equimolar amounts, together with acetic acid;

(b) separating and recovering said phenyl acetate and ethylidene diacetate;

(c) pyrolyzing said phenyl acetate to form phenol and ketene; and

(d) pyrolyzing said ethylidene diacetate to form vinyl acetate and acetic acid.

4,225,729

PROCESS FOR HYDROGENATION OF DIACETOXYBUTENE

Jun Toriya; Ken Shiraga, both of Kurashiki; Takeru Onoda, and Akihisa Ohno, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Continuation of Ser. No. 562,980, Mar. 28, 1975, abandoned. This application Dec. 2, 1976, Ser. No. 747,018
Claims priority, application Japan, Mar. 28, 1974, 49-34844
Int. Cl.[3] C07C *67/283, 69/16*
U.S. Cl. 560—263 **10 Claims**

1. In a process for preparing diacetoxybutane by admitting feed material containing diacetoxybutene into an insulated reaction vessel containing a fixed-bed hydrogenation catalyst, continuously hydrogenating said diacetoxybutene over said catalyst at a temperature of room temperature–200° C., contin-

uously withdrawing a reaction effluent from said reaction vessel and recovering the product diacetoxybutane therefrom, the improvement comprising:

circulating a portion of said withdrawn effluent, with or without gaseous phase-liquid phase separation, in an amount of 0.1 to 100 parts by weight per part of said effluent from which diacetoxybutane is recovered to the inlet of said reaction vessel to mix with the feed material, said portion to be circulated being cooled either prior to or after mixing with said feed material; and

controlling the temperature of the feed mixture so that the temperature of the feed mixture is 5°–100° C. less than the temperature of said withdrawn effluent, thereby maintaining the temperature of the hydrogenation within said range.

4,225,730

PROCESS FOR PREPARING 4-(2,4-DIFLUOROPHENYL)-SALICYCLIC ACID

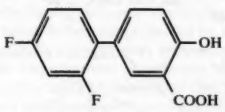
Howard Jones, Holmdel, N.J., and Robert W. Houser, Wapakoneta, Ohio, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 567,201, Apr. 16, 1975, abandoned, and a continuation-in-part of Ser. No. 490,620, Jul. 22, 1974, abandoned. This application May 11, 1978, Ser. No. 905,086

Int. Cl.[2] **C07C** *69/76*

U.S. Cl. 562—469 **8 Claims**

1. A process for the preparation of a compound of formula:



which comprises in sequence, the following steps:

(a) diazotizing 2,4-difluoroaniline in the presence of benzene to produce 2,4-difluorobiphenyl;

(b) acylating the product of Step (a) in the presence of a Friedel-Crafts catalyst with a C_{2-5} alkanoic acid anhydride or C_{2-5} alkanoic acid halide to produce 4-(C_{2-5} alkanoyl)-2',4'-difluorobiphenyl;

(c) oxidizing the C_{2-5} alkanoyl group of the product of Step (b) to produce 4-(C_{2-5} alkanoyloxy)-2',4'-difluorobiphenyl;

(d) hydrolyzing the C_{2-5} alkanoyl group from the product of Step (c) to produce 4-(2,4-difluorophenyl)phenol or alkali metal salt thereof;

(e) carboxylating the product of Step (d) to produce the product 5-(2,4-difluorophenyl)salicylic acid.

4,225,731

PROCESS FOR THE PREPARATION OF TRIFLUOROMETHYLPHENOLS

Albrecht Marhold, Leverkusen, and Erich Klauke, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

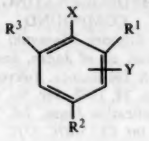
Filed Jul. 13, 1978, Ser. No. 924,474

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1977, 2733682

Int. Cl.[2] **C07C** *39/02*

U.S. Cl. 568—775 **11 Claims**

1. A process for the preparation of a trifluoromethylphenol or the corresponding alkoxy compound which comprises contacting a halogenobenzotrifluoride of the formula



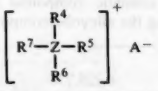
in which

X denotes halogen,

R^1, R^2 and R^3 denote hydrogen, trifluoromethyl or a substituent which promotes the replacement of X by a hydroxyl group and

Y denotes hydrogen, halogen or alkoxy, at least one of the substituents R^1, R^2 and R^3 representing a trifluoromethyl group and at least one of them representing a substituent which promotes the replacement of the radical X by a hydroxl group,

with an excess aqueous alkali metal hydroxide in an alcoholic solution in the presence of a quaternary onium salt of the formula



in which

Z denotes an atom of main group 5 of the periodic system, R^4 to R^7 independently of one another denote alkyl , substituted alkyl, cycloalkyl, substituted cycloalkyl, aryl, or substituted aryl, of two of the radicals R^4 to R^7, together with the central atom Z which can additionally contain additional hetero-atoms, form a heterocyclic ring, the radicals R^4 to R^7 together containing at least 6 carbon atoms, and A denotes a chloride, bromide or hydroxide anion,

at a temperature of from 0° to 80° C.

4,225,732

SELECTIVE ORTHO-ALKYLATION OF PHENOLIC COMPOUNDS WITH AN ALKANE IN THE PRESENCE OF A SUPPORTED NICKEL OXIDE CATALYST

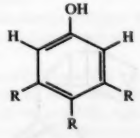
John E. Dabrowski, Lawrenceville, N.J., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 22, 1977, Ser. No. 863,416

Int. Cl.[2] **C07C** *37/12, 39/06*

U.S. Cl. 568—794 **9 Claims**

1. A process for the selective ortho-alkylation of a phenolic compound of the formula:



wherein R is a monovalent substituent selected from the group consisting of hydrogen, alkyl, phenyl and alkyl substituted phenyl, said process comprising contacting said phenolic compound with a lower alkane in the vapor phase in the presence of a supported nickel oxide catalyst.

4,225,733

METHOD FOR HYDROGENATING AN AROMATIC COMPOUND

Tetsuya Kameyama, Koganei; Masayuki Dokiya, Tokyo, and Kenzo Fukuda, Niiza, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jun. 28, 1978, Ser. No. 919,985
Claims priority, application Japan, Jul. 7, 1977, 52/81155
Int. Cl.[2] C07C *5/10*
U.S. Cl. 585—269 6 Claims

1. A method of hydrogenating an aromatic compound comprising: contacting an aromatic compound selected from the group consisting of benzene and alkyl benzene having 1 to 3 alkyl substituents at a temperature of from 25°to 300° C. under a reaction pressure within a range of 1–200 kg/cm^2, with a catalytic amount of a catalyst selected from the group consisting of metal ruthenium, ruthenium hydroxide, ruthenium oxide and a ruthenium salt of an organic acid or inorganic acid, said catalyst being unsupported or supported on a carrier selected from the group consisting of barium sulfate and alumina, and a reducing agent consisting of hydrogen iodide, the amount of the hydrogen iodide being 3–20 times the amount of the aromatic compound, by mole, to completely hydrogenate the aromatic compound and produce an alicyclic compound corresponding to the aromatic compound in near theoretical yields and recovering the alicyclic compound.

4,225,734

PROCESS FOR PRODUCING SYMMETRICAL OLEFINS

John E. McMurry, Soquel, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 617,962, Sep. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 458,065, Apr. 5, 1974, abandoned. This application Aug. 8, 1978, Ser. No. 931,877
Int. Cl.[2] C07C *1/20*
U.S. Cl. 585—351 3 Claims

1. A process for the production of beta-carotene comprising first reducing Ti from an oxidation state greater than II to the reactive Ti(II) species in an inert solvent solution, thereafter reacting the reactive Ti(II) with retinal, then acidifying the reacted solution, separating beta-carotene from the acidified reacted solution with a beta-carotene solvent, and recovering the beta-carotene from the beta-carotene solvent.

4,225,735

ISOMERIZATION OF THE HYDROGENATED NORBORNADIENE ENDO-ENDO HEXACYCLIC DIMER

Lewis W. Hall, Jr., Chadds Ford, Pa.; John D. Tice, Wilmington, Del.; Harry K. Myers, Jr., Aston, and Abraham Schneider, Overbrook Hills, both of Pa., assignors to Suntech, Inc., Philadelphia, Pa.

Filed Jan. 29, 1979, Ser. No. 7,113
Int. Cl.[2] C07C *13/28, 15/12*
U.S. Cl. 585—360 4 Claims

1. Process for the isomerization of a saturated endo-endo norbornadiene hexacyclic dimer comprising contacting a hexacyclic dimer having the following structure:

with a catalytic amount of acidic alumina or a montmorillonite at an isomerization temperature until an isomer is formed.

4,225,736

CODIMER OF NORBORNADIENE AND CYCLOHEXADIENE

Harry K. Myers, Jr., Aston, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 933,231, Aug. 14, 1978, which is a continuation of Ser. No. 818,489, Jul. 25, 1977, abandoned. This application Apr. 17, 1979, Ser. No. 30,967
Int. Cl.[2] C07C *13/28*
U.S. Cl. 585—360 10 Claims

1. Process for the catalytic codimerization of norbornadiene and 1,3-cyclohexadiene comprising:

(a) contacting norbornadiene and 1,3-cyclohexadiene in the presence of a catalytic amount of a three-component homogeneous catalytic system consisting of cobaltic or cobaltous acetylacetonate, 1,2-bisdiphenylphosphino ethane and one of the following alkyl aluminum chlorides: diethylaluminum chloride, ethyl aluminum dichloride and ethyl aluminum sesquichloride;

(b) having the contacting occurring at a temperature within the range from between about 20° C. to about 100° C.; and

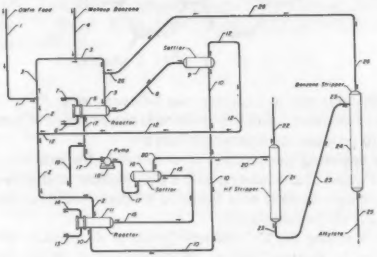
(c) continuing the contacting until the codimer of norbornadiene and 1,3-cyclohexadiene is prepared.

4,225,737

ALKYLATION PROCESS

Michael Z. Mikulicz, Palatine, and James F. Himes, Mt. Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Apr. 23, 1979, Ser. No. 32,613
Int. Cl.[3] C07C *2/66*
U.S. Cl. 585—449 7 Claims



1. A process for the alkylation of an aromatic hydrocarbon with an olefin-acting alkylating agent which comprises:

(a) commingling an aromatic hydrocarbon and a first portion of said olefin-acting alkylating agent at alkylation reaction conditions in a first alkylation reaction zone in contact with a hydrofluoric acid catalyst;

(b) separating the effluent from said first alkylation reaction zone into an acid phase and a hydrocarbon phase comprising alkylate and unreacted aromatic hydrocarbon;

(c) commingling said hydrocarbon phase with a second portion of said olefin-acting alkylating agent at alkylation reaction conditions in a second alkylation reaction zone in contact with said acid phase transferred from said first to said second reaction zone by maintaining a pressure differential between the first and second zones of from about 5 to about 20 psig.;

(d) separating the effluent from said second alkylation reaction zone into an acid phase and a hydrocarbon phase and recycling the former to said first alkylation reaction zone; and,

(e) recovering an aromatic alkylation product from the last-mentioned hydrocarbon phase.

4,225,738

PRODUCTION OF HIGH PURITY BUTADIENE

John L. Cihonski, Odessa, Tex., assignor to El Paso Products Company, Odessa, Tex.

Filed Apr. 23, 1979, Ser. No. 32,290
Int. Cl.[3] C07C 5/00, 5/333
U.S. Cl. 585—506 12 Claims

1. A process for the production of high purity 1,3-butadiene which comprises the steps of (1) contacting n-butene with a Group VIII metal oxide or hydroxide catalyst in the presence of molecular oxygen at a temperature between about 130° C. and 500° C. and a pressure between about 1 and 200 psi to convert the n-butene feed to an intermediate product mixture containing vinylcyclohexene, wherein said vinylcyclohexene is produced with a conversion efficiency of at least 65 weight percent; (2) removing C_4-hydrocarbons from the intermediate product mixture; and (3) subjecting the product mixture to a temperature between about 500° C. and 1000° C. and a pressure between about 1 and 200 psi for a period of time between about 0.01 and 10 seconds to yield a normally gaseous product consisting substantially of 1,3-butadiene.

4,225,739

PROCESS FOR IMPROVING OLEFIN POLYMER OIL PROPERTIES

Richard N. Nipe; John W. Schick, both of Cherry Hill, and Robert M. Gemmill, Jr., Pitman, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 848,968, Nov. 7, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,412
Int. Cl.[2] C07C 3/18
U.S. Cl. 585—525 4 Claims

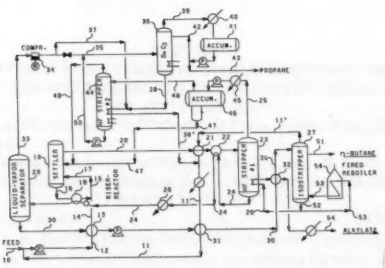
1. In a process for oligomerizing a short chain 1-olefin and a long chain 1-olefin having between 14 and 20 carbon atoms in the presence of boron trifluoride promoted by a minor amount of alcohol or water, at a temperature between about 0° C. and about 60° C.; the improvement in reducing viscosity and increasing the viscosity index of finished oil that results from the incorporation of a small amount of recycle using a weight ratio of short chain 1-olefin/long chain 1-olefin/recycle of 0.9–1/1/0.1–0.2; said recycle having a boiling range between about 50° C. and about 122° C. at 1.0 mm mercury pressure.

4,225,740

ALKYLATION SEPARATION PROCESS

Charles C. Chapman, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 17, 1979, Ser. No. 39,931
Int. Cl.[2] C07C 3/54
U.S. Cl. 585—719 8 Claims



6. In a process of alkylating at least one isoparaffinic hydrocarbon with at least one olefinic hydrocarbon in the presence of HF acid catalyst in a reaction zone and wherein the reaction mixture is separated into a liquid hydrocarbon phase and an HF acid catalyst phase and the separated hydrocarbon phase is subjected to separation of propane, HF acid, isoparaffins and paraffins from alkylate product, the improvement comprising:

(a) stripping HF acid from said hydrocarbon phase and vaporizing the stripped hydrocarbon phase;

(b) separating the vaporized, stripped hydrocarbon phase into a vapor phase and a liquid phase;

(c) increasing the pressure of said vapor phase in (b) and fractionating propane therefrom;

(d) recovering a liquid phase from (c) and returning same to alkylation; and

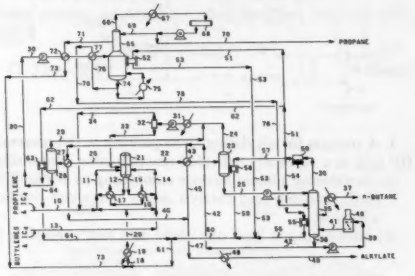
(e) fractionating the liquid phase of (b) into a paraffin stream, an isoparaffin stream, and alkylate.

4,225,741

PARALLEL ALKYLATION REACTIONS UTILIZING PRESSURED VAPOROUS ISOPARAFFIN FOR INDIRECT HEAT EXCHANGE WITH FRACTIONATORS AND/OR HF STRIPPERS

Charles C. Chapman, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 1, 1979, Ser. No. 62,663
Int. Cl.[2] C07C 3/54
U.S. Cl. 585—719 8 Claims



1. An alkylation process which comprises:

(a) reacting in a first reaction zone (A), isobutane with propylene in the presence of HF acid under conditions which form alkylate;

(b) separating the alkylation reaction effluent from (a) into a liquid HF acid phase and a liquid hydrocarbon phase containing residual HF acid;

(c) passing said liquid hydrocarbon phase, separated in (b) to the first HF stripping zone and subjecting same to stripping conditions to remove HF and light hydrocarbons overhead and a hydrocarbon stream substantially free of HF as bottoms;

(d) fractionating said bottoms separated in (c) into a propane overhead stream and isobutane side stream and a first propylene alkylate bottoms stream;

(e) reacting in a second reaction zone (B) isobutane with butylenes in the presence of HF acid under conditions which form alkylate;

(f) separating the alkylation effluent from (d) into a liquid HF acid phase and a liquid hydrocarbon phase containing residual HF acid;

(g) passing said liquid hydrocarbon phase separated in (f) to a second HF stripping zone and subjecting same to stripping conditions to remove HF, light hydrocarbons overhead and a hydrocarbon stream substantially free of HF as bottoms;

(h) fractionating said bottoms separated in (g) into an isobutane overhead stream, a butane side stream and a butylenes alkylate bottoms stream;

(i) pressurizing said vaporous overhead isobutane stream separated from (h) and

(j) passing said pressurized stream of (i) into a heat exchange relationship with at least one of;

(1) the lower portion of said fractionation zone in (d) and (h) and

(2) the lower portion of said HF first and second stripping zones in (c) and (g).

4,225,742

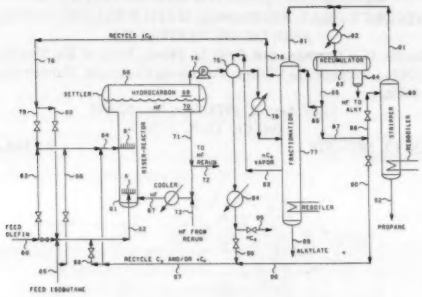
ALKYLATION PROCESS

Thomas Hutson, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 839,728, Oct. 5, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,332

Int. Cl.[2] C07C *3/54*

U.S. Cl. 585—723 **15 Claims**



1. A process for alkylating an isoparaffin in the presence of HF acid in a vertically extended reaction zone comprising:

(a) introducing a liquid mixture comprising an isoparaffin, an olefin, and HF acid catalyst into a lower end portion of said zone,

(b) introducing at least one olefin into said zone at at least one point substantially downstream of the place of introduction of olefin in (a),

(c) maintaining suitable conditions of temperature, pressure, and residence time in said reaction zone to form alkylate,

(d) passing the reaction effluent containing alkylate from said zone to a settling zone to separate an HF acid phase and a hydrocarbon phase containing alkylate and unreacted isoparaffin, HF acid, and normal paraffins,

(e) fractionating said hydrocarbon phase into a normal paraffin fraction comprising principally normal C_3 and C_4 paraffin hydrocarbons freed of alkylate, an isoparaffin fraction, and an alkylate fraction, and

(f) recycling at least a portion of said normal paraffin fraction in (e) to each point of downstream introduction of olefin in (b) in an amount sufficient to provide a hydrocarbon to olefin volume ratio of about 2 to 1 to about 50 to 1.

4,225,743

DIMERIZATION OF BUTENES CONTAINING ISOBUTENE TO MINIMIZE 2,2,4-TRIMETHYL PENTENES

Satoshi Hoshiyama; Shuichi Fukushima; Hiroshi Kobayashi, and Hideki Takamatsu, all of Funabashi, Japan, assignors to Nissan Chemical Industries Limited, Tokyo, Japan

Filed Dec. 15, 1978, Ser. No. 969,870

Claims priority, application Japan, Dec. 29, 1977, 52/158862

Int. Cl.[2] C07C *3/10*

U.S. Cl. 585—512 **10 Claims**

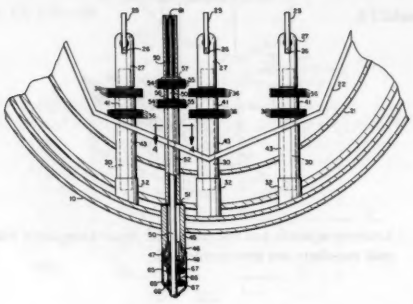
1. In a dimerization of a C_4 fraction containing 5 to 55% of isobutene and a main component of n-butene to minimize the formation of 2,2,4-trimethyl pentenes, the improvement comprising carrying out the dimerization of butenes in the presence of a catalyst system of a nickel salt of fatty acid and 1.5 to 40 wt.% of a free fatty acid having less than 0.1 wt.% of a water content and an organoaluminum halide.

4,225,744

FIXED THERMOCOUPLE FOR VACUUM ELECTRIC FURNACES

William R. Jones, Chalfont, and Prem C. Jindal, Feasterville, both of Pa., assignors to Abar Corporation, Feasterville, Pa.

Filed Jan. 15, 1979, Ser. No. 3,659
Int. Cl.[3] H05B *7/16*
U.S. Cl. 13—20 **4 Claims**



1. A fixed thermocouple assembly for vacuum electric furnaces having a hostile environment therein and containing electrically conductive ions capable of deposition on objects within the furnace comprising

a thermocouple enclosing tube,

sealing members exteriorly of said furnace for supporting said tube in said furnace,

an electrical non-conductive tubular shield at the inner end of said tube,

a spacer insulator member carried on said tube spaced from said tubular shield,

a covering member for said thermocouple tube extending exteriorly of the furnace and in supporting relation to said spacer insulator member,

at least one group of spaced shielding members of heat resistant electrical non-conducting material on said tube between said tubular shield and said spacer insulator member and extending outwardly from said tube for shielding said tube from deposition of electrically conductive material thereon,

said shielding members comprising closely spaced readily replaceable discs of different diameters.

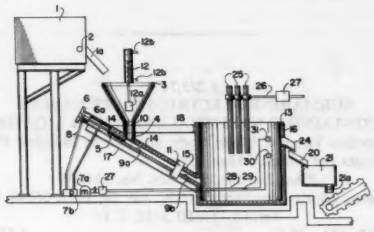
4,225,745

METHOD FOR CHARGING SMALL PARTICLES OF IRON OR STEEL DIRECTLY INTO MOLTEN METAL IN AN ARC FURNACE

Earnest W. Harwell, 31475 Creekside Drive, Pepper Pike, Ohio 44124

Continuation-in-part of Ser. No. 820,301, Jul. 29, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,417
Int. Cl.[2] F27D *3/04*
U.S. Cl. 13—33 **1 Claim**

1. A method of charging small solid particles of iron or steel directly into a mass of similar metal in a melting furnace, comprising mechanically forcing by applied power a large quantity of said solid particles down a feeder chute at an acute angle to the horizontal directly into a molten mass of similar metal in an electrical melting furnace well below the level of said molten metal in said furnace, using a hydraulic cylinder and piston motor, including the step of varying the power input to said cylinder and piston motor responsive to the level of the molten metal in said furnace, the solid particles of iron or steel entering



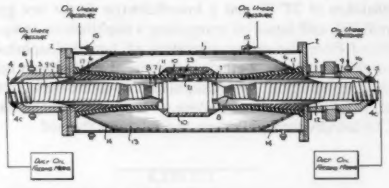
said feeder chute at a point below the level of the molten metal in said furnace.

4,225,746

OIL-FILLED ELECTRIC CABLE JOINT WITHOUT OIL CHANNEL IN JOINT INSULATION

Edmund H. Ball, Bassett, England, assignor to Pirelli General Cable Works, Limited, London, England

Filed May 23, 1979, Ser. No. 41,640
Claims priority, application United Kingdom, May 31, 1978, 25826/78
Int. Cl.[2] H02G *15/24*
U.S. Cl. 174—22 R **9 Claims**



1. A joint between a pair of oil-filled, electric cables, each of said cables having a core comprising a conductor surrounded by insulation and having a sheath surrounding the core, said sheath being slightly spaced, at least in part, from the core to permit the flow of oil between the sheath and the core and said insulation being penetrable by the oil, said joint comprising:

means electrically interconnecting the conductor of one cable with the conductor of the other cable;

insulation enclosing said means, said insulation being without a channel therein for the free flow of oil from the exterior to the interior thereof and thereby preventing the flow of oil from the exterior thereof to the cable conductors except to the extent that said last-mentioned insulation is itself penetrable by oil;

an oil tight casing surrounding said insulation and said means, said core having a portion thereof spaced from said means which is exposed within said casing, said sheath terminating within said casing at a position spaced from said means to expose the space between said core and said sheath within said casing and said casing having at least

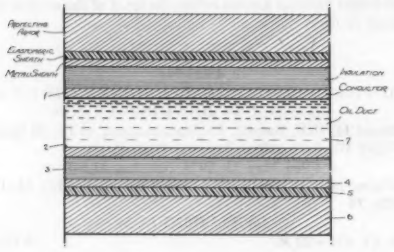
one port for supplying oil under pressure to the exposed portion of said core and to said space to maintain the oil within the core.

4,225,747

SUBMARINE ELECTRIC POWER CABLES CONTAINING NAPHTHALENE BASED LIQUIDS

Bernardino Vecellio, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Jul. 17, 1978, Ser. No. 924,857
Claims priority, application Italy, Jul. 29, 1977, 26298 A/77
Int. Cl.[2] H01B *3/22, 7/34*
U.S. Cl. 174—25 C **7 Claims**



1. A liquid oil-filled, submarine, electric power cable comprising a conductor surrounded by insulation and at least one longitudinal duct capable of circulating said liquid oil, said duct being substantially filled with and said insulation being impregnated with a liquid oil having a viscosity less than 15 centistokes at 20° C. and a low dielectric factor not greater than 0.001, said liquid oil comprising a naphthalene compound selected from the group consisting of 1-methylnaphthalene, 1-ethylnaphthalene, 2-ethylnapthalene, 1-propylnaphthalene, 1-butylnaphthalene, 2-butylnaphthalene, 2-tert-butylnaphthalene, 1-3-dimethylnaphthalene, 1-6-dimethylnaphthalene, 1,2,3,4-tetrahydronaphthalene and mixtures thereof.

4,225,748

SWITCHING DEVICE, ESPECIALLY FOR ELECTRONIC CONTACTLESS SWITCHES, E.G. PROXIMITY SWITCHES

Robert Buck, Kirchbühlweg 128, 7995 Neukirch, and Gerd Marhofer, Beckmannsbusch 67, 4300 Essen-Bredeney, both of Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,322
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724939
Int. Cl.[3] H05K *5/00*
U.S. Cl. 174—52 R **9 Claims**

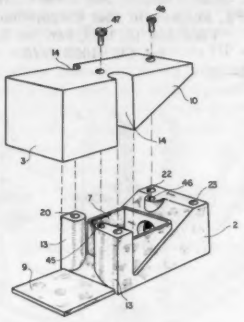
1. A switch assembly comprising:

a housing having a lower housing member and an upper housing member interfitting to form a generally rectangular parallelepipedal configuration, said lower housing member being formed with a lower receptacle and said upper housing member being formed with an upper receptacle;

a terminal unit connectable to a cable and received in said lower receptacle;

an electric switch unit received in said upper receptacle and connectable to said terminal unit; and

means for securing said members together, said upper member being removable from said lower member, thereby detaching said switch unit therefrom, said lower member being formed with a cover plate projecting from said



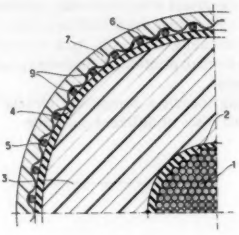
lower receptable and covering said upper receptacle when said members are interconnected.

4,225,749

SEALED POWER CABLE

Bernard Pierre; Ivan Eyraud, both of Lyons, and Jean Gaubert, Miribel, all of France, assignors to Les Cables de Lyon, Lyons, France

Filed Sep. 28, 1978, Ser. No. 946,924
Claims priority, application France, Oct. 27, 1977, 77 32437
Int. Cl.[3] H01B *7/28*
U.S. Cl. 174—107 **2 Claims**

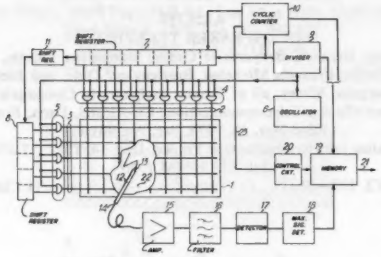


1. A sealed power cable comprising, from its center to its periphery, a stranded conductor, a first inner screen of semiconductor material, an insulator, a second outer screen of semi-conductor material, a metal strip and an outer sheath of plastic material, said metal strip being coated with a layer of plastic material at least on one of its surface to provide good adherence with the adjacent component, the improvement comprising: sealing means formed by plastic rods in which cellulose fibers are fixed, said rods being placed generally longitudinally on said cable and generally parallel to the generatrices of the cable, and wherein said metal strip overlies said rods and is generally longitudinally corrugated by contact with said rods to allow thermal expansion without affecting the sealing of the metal strip and the sealing means defined by said plastic rods disposed between the "troughs" or the corrugations of the metal strips and the second outer semiconductor screen.

4,225,750
GRAPHICS TABLE PARTICULARLY FOR A TELEWRITING SYSTEM

Jean-Claude Rahuel, 12, Square de Tanouarn, and Jean-Paul Dagnelie, 7, Quai de la Prévalaye, both of, 35000 Rennes, France

Filed Dec. 4, 1978, Ser. No. 966,519
Claims priority, application France, Dec. 21, 1977, 77 39395
Int. Cl.[2] G08C 21/00
U.S. Cl. 178—19 **4 Claims**



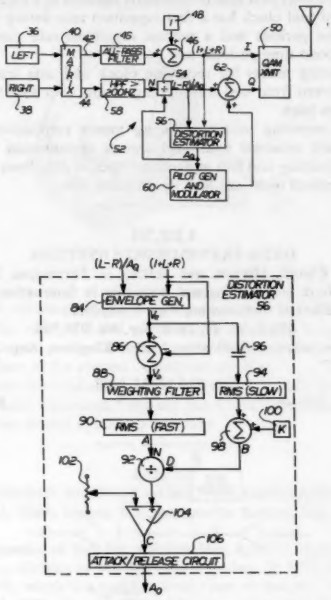
1. A graphics table comprising a non-conductive plate means carrying two orthogonally oriented sets of wires and a coaxial pen means capable of picking up electrical signals and of writing on a sheet of paper placed on the non-conducting plate, means for successively scanning the wires of one set and of the other by an electric current, and said pen comprising reception means for a field created by the electric current successively applied to the wires during the scanning of the sets of wires, characterized in that said electric current has a high frequency in the order of ten megahertz, the scanning frequency of said wires being in the order of one hundred kilohertz.

4,225,751
VARIABLE-ANGLE, MULTIPLE CHANNEL AMPLITUDE MODULATION SYSTEM

David L. Hershberger, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Dec. 18, 1978, Ser. No. 970,652
Int. Cl.[2] H04H 5/00
U.S. Cl. 179—1 GS **48 Claims**

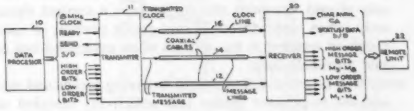
24. An AM stereo modulator comprising means for providing first and second signals, and means responsive to said first and second signals to provide two phase displaced AM carrier components with the amplitude of each of said AM components being modulated in accordance with a corresponding one of said first and second signals, and with the phase displacement between said AM components being varied in dependence upon characteristics of said first and second signals.



4,225,752
HIGH SPEED, LOW NOISE DIGITAL DATA COMMUNICATION SYSTEM

Floyd W. Looschen, Laguna Beach, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 3, 1978, Ser. No. 883,302
Int. Cl.[3] H04J 3/06
U.S. Cl. 370—1 **9 Claims**



1. In a digital data communication system, the combination comprising:

at least first and second individual transmission lines; transmitting means for transmitting digital data over said transmission lines;

said transmitting means including means for transmitting digital data over said first transmission line in a manner such that a first type of data is transmitted during first time periods and a second type of data is transmitted during second time periods occurring between said first time periods, said first type of data being a message and said

second type of data being message identifying data which identifies the type of message transmitted;

said transmitting means also including means for transmitting a clock over said second transmission line concurrently with transmission of said first and second types of data over said first transmission line and in a manner such that said clock has a first repetition rate during said first time periods and a second repetition rate during said second time periods; and

receiving means for receiving clock and data transmitted thereto from said transmitting means over said transmission lines;

said receiving means including means responsive to the clock received over said second transmission line for extracting said first and second types of data from the data received over said first transmission line.

4,225,753

DATA TRANSMISSION SYSTEMS

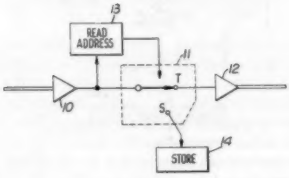
Martin Chown, Harlow, and Jeffrey G. Farrington, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,766

Claims priority, application United Kingdom, Aug. 2, 1979, 32389/77

Int. Cl.[2] H04J *3/08*

U.S. Cl. 370—4 **5 Claims**



1. A data transmission system comprising:

a plurality of data terminals; and

transmission links interconnecting said terminals to form a closed loop data transmission system;

each of said terminals including

receiving means coupled to an associated one of said link to receive a message having a message portion and a prefix portion including at least an address of that one of said terminals for which said message is intended,

transmitting means coupled to another associated one of said link to transmit at least said prefix portion,

an address responsive means coupled to said receiving means to compare said address in said prefix portion of each received message with the address of its associated one of said terminals and to produce a control signal only when said address in said prefix portion of each received message is the address of its associated one of said terminals, and

switching means coupled to said receiving means and said address responsive means and selectively coupled to said transmitting means, said switching means responding to the presence of said control signal to couple said prefix portion producing said control signal to said transmitting means for transmission to that one of said terminals originating said message containing said prefix portion producing said control signal and to couple said message portion of said message containing said prefix portion producing said control signal to a storage means for processing in the associated one of said terminals and said switching means responding to the absence of said control signal to couple both said prefix portion and said message portion of said message not intended for the associated one of said terminals to said transmitting means for transmission of both portions of said message to the next succeeding one of said terminals,

whereby reception of only said prefix portion at that one of said terminals originating said message indicates that said message has been received and that said closed-loop system is intact and whereby failure of that one of said terminals originating said message to receive only said prefix portion after a pre-set time, or said prefix portion is received with its message portion attached indicates a system fault.

4,225,754

LOUDSPEAKER TELEPHONE

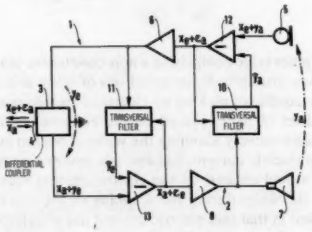
Solange Bernard, Bruyeres le Chatel; Dominique Lajotte, Ris Orangis; Francois Michelon, Bretigny sur Orge, and Jacques Sourgens, Massy, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Nov. 16, 1978, Ser. No. 961,176

Claims priority, application France, Dec. 14, 1977, 77 37650

Int. Cl.[2] H04M *1/60*

U.S. Cl. 179—81 B **11 Claims**



1. A loudspeaking telephone comprising:

a differential coupler for connection to a two-wire telephone line and including an input and an output;

a microphone circuit having its output connected to the input of a transmission channel whose output is connected to the input of the differential coupler;

a loudspeaker circuit having its input connected to the output of a reception channel whose input is connected to the output of the differential coupler; and

first and second adaptive transversal filter means associated respectively with the transmission channel and with the reception channel;

both of the adaptive transversal filter means having controlled weighting and filter coefficients, and including:

a signal combining circuit;

a transversal filter having a first signal input connected to receive the output signal of the associated signal combining circuit;

said transversal filter further having a second signal input connected to receive the output signal of the other channel; and

a signal output connected to deliver a filter output signal to the signal combining circuit;

the signal combining circuit being connected in series with the other channel to receive the input signal of the other channel, to combine it with the filter output signal and to apply the combined signal to the remainder of the said other channel; and

a control input for controlling the coefficients connected to receive the combined signal;

whereby said first adaptive transversal filter means uses the output signal of the reception channel to synthesise any acoustic echo signal component present in the output from the microphone circuit, and its combining circuit substracts the real and the synthetic acoustic echo signal components from each other to reduce the acoustic echo signal component in the transmission channel to a residual

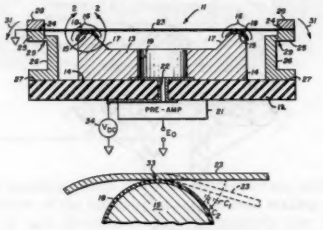
level; and likewise the second adaptive transversal filter means uses the output signal of the transmission channel to synthesise any electrical echo signal component present in the output from the differential coupler, and its combining circuit subtracts the real and the synthetic electrical echo signal components from each other to reduce the electrical echo signal component in the reception channel to a residual level.

4,225,755

CAPACITIVE FORCE TRANSDUCER

Barry Block, 30610 Page Mill Rd., Los Altos Hills, Calif. 94022

Filed May 8, 1978, Ser. No. 903,827
Int. Cl.[2] H04R 7/18; G11B 3/44
U.S. Cl. 179—111 E **8 Claims**



1. In a force transducer for capacitively detecting the deflection of a deflectable member in response to an applied force;

first and second electrode means for disposition facing each other and for defining an electrical capacitance therebetween;

said first electrode means being deflectable relative to said second electrode means in response to a force to be transduced to an electrical output and which force is to be applied to said deflectable electrode means to produce deflection thereof and a consequent change in capacitance between said first and second electrode means, which change in capacitance is a function of the applied force to be transduced; and

holder means for securing together said first and second electrode means in electrically insulative relation at a virtual pivot, said first deflectable electrode means being pivotably deflectable relative to said second electrode means about said virtual pivot, and the capacitance between said first and second electrode means being predominantly attributable to the mutually opposed capacitive face regions of said first and second electrode means in the immediate region of said virtual pivot.

4,225,756

BROAD BAND DYNAMIC LOUDSPEAKER

Burton A. Babb, Dallas, Tex., assignor to Babbco, Ltd., Dallas, Tex.

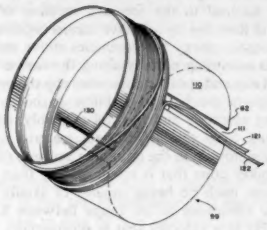
Continuation of Ser. No. 858,728, Dec. 8, 1977, abandoned, which is a division of Ser. No. 669,315, Mar. 22, 1976, Pat. No. 4,115,667, which is a continuation-in-part of Ser. No. 372,074, Jun. 21, 1973, Pat. No. 3,983,337. This application Dec. 18, 1978, Ser. No. 970,799
Int. Cl.[2] H04R 7/14
U.S. Cl. 179—115.5 VC **4 Claims**

1. A loudspeaker coil assembly adapted for reciprocal movement in a magnetic flux gap to acoustically excite a speaker cone, the coil structure comprising:

a first generally cylindrical member formed of a thin flexible material and having a thin adhesive layer on the outer cylindrical surface thereof,

a second generally cylindrical member having an edge overlapping one edge of the first cylindrical member and secured thereto by the adhesive layer, the second cylindrical member having sufficient axial rigidity to efficiently transmit acoustic energy in the audio frequency range from a voice coil to the speaker cone,

a voice coil wound substantially on the first cylindrical member including portions thereof proximate to the overlapped edges of the cylindrical members, and



a rigid adhesive coating disposed over the exterior surfaces of the voice coil and continuously extending beyond the voice coil on to at least a portion of the adjacent exterior surface of the second cylindrical member,

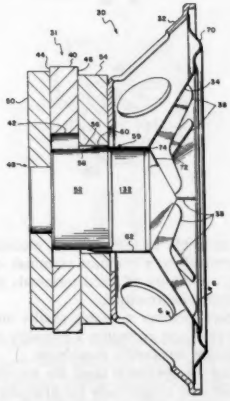
whereby the rigid adhesive coating transmits high frequency acoustic vibrations from the voice coil, when energized, to the second cylindrical member.

4,225,757

BROAD BAND DYNAMIC LOUDSPEAKER

Burton A. Babb, Dallas, Tex., assignor to Babbco, Ltd., Dallas, Tex.

Continuation of Ser. No. 858,727, Dec. 8, 1977, abandoned, which is a division of Ser. No. 669,315, Mar. 22, 1976, Pat. No. 4,115,667, which is a continuation-in-part of Ser. No. 372,074, Jun. 21, 1973, Pat. No. 3,983,337. This application Dec. 18, 1978, Ser. No. 970,798
Int. Cl.[2] H04R 7/14
U.S. Cl. 179—115.5 R **5 Claims**



1. A loudspeaker comprising:

a frame,

a magnetic assembly supported by the frame, the magnetic assembly including a center pole and an outer pole disposed around the center pole to form an annular flux gap therebetween, the center pole having a free forward end,

a radially flexible coil assembly, the coil assembly including a voice coil wound upon a tubular coil form and disposed for axial reciprocating movement in the annular flux gap,

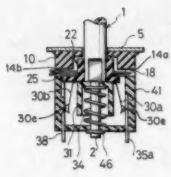
an acoustic radiating assembly coupled to the coil assembly for radiating acoustic energy in response to the reciprocating movement of the coil assembly, the acoustic radiating assembly including a centrally located dust cap disposed forward from the free forward end of the center pole, a generally frustoconical shaped speaker cone adjoining the dust cap and flaring radially outward and axially forward from the dust cap and a plurality of sound transmitting ribs rigidly secured to the forward surfaces of the speaker cone and dust cap by adhesive means capable of transmitting acoustic energy at frequencies above about 8,000 Hz, each rib extending radially along the forward surfaces of the dust cap and speaker cone whereby the presence of the ribs imparts mechanical stability to both the acoustic radiating assembly and the coil assembly, each rib being fabricated from thin rigid sheet material and having a dimension normal to the adjoining surfaces of the dust cap and speaker cone that is much greater than its thickness dimension, each rib being capable of axially transmitting acoustic vibrations in the range between 8,000 Hz and 16,000 Hz at a velocity that is substantially equal to the velocity of acoustic energy in air under standard conditions.

4,225,758

SWITCH OPERATED AXIALLY OR ROTATABLY

Shiro Kondo, and Yoshinori Watanabe, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1978, Ser. No. 921,469
Claims priority, application Japan, Jul. 6, 1977, 52-89333[U]
Int. Cl.[2] H01H *21/68*
U.S. Cl. 200—4 **11 Claims**



1. A switch operable to interconnect electrically selected various fixed terminals to a common terminal, comprising:
- a case having a plurality of fixed terminals and a common terminal secured therewithin;
- a sliding contact member movable axially and rotationally within said case and including a plurality of contact elements extending outwardly therefrom;
- means including an operation shaft for moving said sliding member axially or rotationally for bringing selected ones of said contact elements into engagement with said common terminal and at least one selected fixed terminal;
- a spring member operatively associated with said moving means for returning said sliding member to its initial rotational position after rotary movement thereof; and
- a second spring operatively associated with said moving means for returning said sliding member to its initial axial position after axial movement thereof;

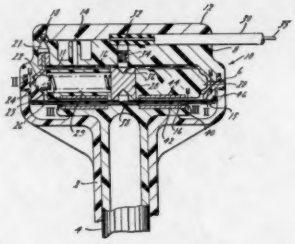
whereby at least one fixed terminal will be electrically interconnected with said common terminal upon rotation of said shaft in a first direction and at least one of the other fixed terminals will be electrically interconnected with said common terminal upon rotation of said shaft in a second direction, and further at least one of the remaining fixed terminals will be electrically interconnected with said common terminal upon axial movement of said shaft.

4,225,759

HIGH VOLTAGE DISTRIBUTOR UTILIZING A HIGH DIELECTRIC FLUID MEDIUM

David H. Fox, Ann Arbor, and Robert L. Kuhn, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 21, 1977, Ser. No. 853,698
Int. Cl.[3] H01H *19/00*
U.S. Cl. 200—19 M **13 Claims**



1. A distributor for sequentially switching high voltage supplied at a common terminal to individually selected output terminals comprising:
- housing means for mounting said common and output terminals and for defining a fluid-tight cavity;
- rotor means mounted for rotation about an axis within said defined cavity in electrical contact with said common terminal and providing an electrically conducting path from said common terminal and individually selected output terminals;
- said rotor means also includes a permanent magnet, defining north and south poles orthogonal to said axis, mounted for magnetic communication with an externally generated magnetic field;
- shaft means for communicating rotational driving force to said rotor means, wherein said shaft means includes a first end having a permanent magnet, defining north and south poles oppositely corresponding to said rotor magnet, positioned adjacent said housing to provide said externally generated magnetic field; and
- a dielectric fluid having a dielectric constant greater than that of air, occupying the remainder of said cavity.

4,225,760

PRESSURE ACTUATED UNIT WITH HIGH TEMPERATURE PROTECTION

Donald L. Griffith, Northridge, and Lawrence A. Dunham, Chatsworth, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

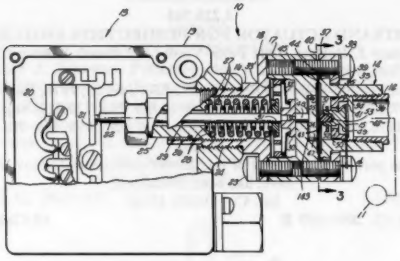
Filed May 30, 1978, Ser. No. 910,780
Int. Cl.[3] F16K *17/38;* H01H *35/34, 35/38*
U.S. Cl. 200—83 R **22 Claims**

1. The combination comprising:
- a pressure fitting containing a chamber within which a pressurized fluid is received and having an opening leading from said chamber to the exterior of the fitting;
- a pressure responsive assembly formed at least in part of material susceptible to damage by high temperatures encountered under fire conditions, said assembly including a body structure attached to said fitting about said opening, and a pressure actuated part mounted movably to said

body structure and actuable relative thereto in accordance with variations in force exerted by said pressure fluid through said opening;

a movable seal unit through which the force of the pressure fluid is exerted against said pressure actuated part and acting to prevent leakage of fluid from said fitting;

said fitting being formed of material capable of withstanding high temperatures which would damage said pressure responsive assembly and destroy the integrity of said seal unit; and



a valve member which responds to destruction and/or deformation of the integrity of the material making up said part of said pressure responsive assembly due to high temperature, said valve member being capable of withstanding said temperatures high enough to damage said pressure responsive assembly to destroy the integrity of said seal unit and automatically responding to an increase in temperature to close said opening against loss of fluid therethrough from said chamber.

6. The combination as recited in claim 1, in which said pressure responsive assembly includes electrical switch means actuable by movement of said pressure actuated part.

4,225,761

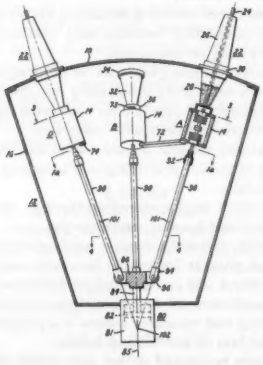
ELECTRIC CIRCUIT BREAKER COMPRISING A PLURALITY OF VACUUM INTERRUPTERS SIMULTANEOUSLY OPERATED BY A COMMON OPERATOR

Philip Barkan, Stanford, Calif., and Imdad Imam, Secane, Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Oct. 12, 1977, Ser. No. 841,429

Int. Cl.[2] H01H *33/66*

U.S. Cl. 200—144 B **14 Claims**



1. An electric circuit breaker comprising:

(a) a plurality of vacuum-type circuit interrupters, each comprising a first contact, a second contact movable into and out of engagement with said first contact, and a movable contact rod on which said second contact is mounted extending between the interior and the exterior of said interrupter,

(b) an operating device at substantially ground potential for said interrupters comprising a substantially linearly-movable operating member movable during a circuit-breaker opening stroke along substantially a predetermined reference axis,

(c) means for mounting said interrupters at one side of said operating member with their movable contact rods extending in a direction generally toward said operating member,

(d) and means for mechanically coupling said operating member to said movable contact rods comprising a plurality of operating rods primarily of insulating material, each connected at one end to said operating member and at its opposite end to one of said movable contact rods, said operating rods being of substantially equal length and having longitudinal axes that converge and intersect at substantially a common point.

4,225,762

GAS BLAST CIRCUIT BREAKER

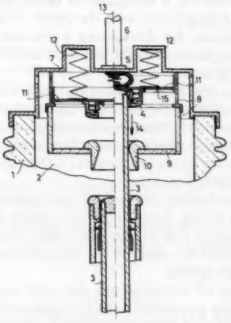
Karl Zückler, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,214

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759267

Int. Cl.[2] H01H *9/30*

U.S. Cl. 200—144 R **6 Claims**



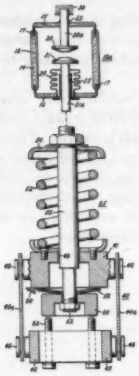
1. In a gas blast circuit breaker having a movable contact disposed in a switching chamber filled with gas and a spring biased mating contact which follows the movable contact at the onset of a switching-off motion thereof, the switching chamber being divided by a stationary wall having a middle opening which is penetrated by the movable contact and the switching chamber containing a movable wall which, in moving, follows the switching-off motion and compresses the gas which is between the movable and the stationary wall, the improvement in which the movable wall comprises a piston which is spring-loaded in the direction of the switching-off motion, carries the mating contact, and comprises an end face of the switching chamber.

4,225,763

MEANS FOR SUPPRESSING CONTACT-SEPARATION AT THE END OF A VACUUM CIRCUIT-BREAKER CLOSING OPERATION

Philip Barkan, Stanford, Calif., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 23, 1978, Ser. No. 889,466
Int. Cl.[3] H01H *33/66*
U.S. Cl. 200—144 B **7 Claims**



1. A vacuum-type circuit breaker comprising:

(a) a plurality of vacuum circuit interrupters, each comprising:

(i) an evacuated envelope,

(ii) a pair of separable contacts within said envelope,

(iii) a movable contact rod secured to one of said contacts for actuating said one contact and extending between the inside and outside of said envelope, and

(iv) a bellows providing a seal between said movable contact rod and said envelope on which pressure external to said envelope acts to apply a bellows force to said contact rod in a direction to drive said one contact toward engagement with the other of said contacts,

(b) motive means for developing a circuit-breaker closing force for application to the movable contact rods of all of said interrupters,

(c) a common operating member through which said closing force is applied to the movable contact rods of all of said interrupters, said common operating member being the closest common operating member to said interrupters in the drive train to the interrupters if there is more than one common operating member,

(d) a wipe mechanism for each of said interrupters comprising a wipe spring through which closing force is applied to the contact rod of the associated interrupter and a force-transmitting member for transmitting closing force to said wipe spring,

(e) a plurality of linkages, one for each interrupter, each linkage being connected between said common operating member and said force-transmitting member in the wipe mechanism for the associated interrupter,

(f) each of said linkages comprising a plurality of pin joints connected mechanically in series between said common operating member and said associated force-transmitting member, each of said pin joints comprising a pin and a bearing that rotates with respect to said pin during circuit-breaker closing, a preselected one of said pin joints in each linkage being located at the contact-end of the associated linkage for coupling said contact-rod end of the linkage to the associated force-transmitting member, said preselected pin joint being devoid of any lost motion usable to effect significant changes in stroke length of the associated interrupter, and

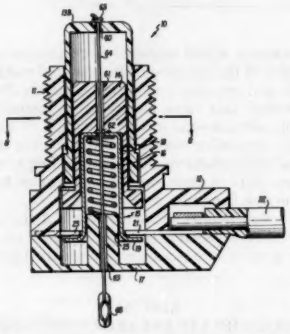
(g) opening spring means effectively located at the movable contact-rod end of each of said linkages that comprises at least three of said series-connected pin joints for applying a bias to said associated three-or-more pin joint linkage that acts upon all of the pin joints in said associated linkage to eliminate from said acted-upon pin joints such clearance as allows reversal of the associated movable contact rod immediately following contact-engagement near the end of a closing operation while closing force is still being applied to said associated linkage by said motive means.

4,225,764

STRAND ACTUATOR FOR PUSHBUTTON SWITCH

Horace J. Buttner, 1501 Palos Verdes Dr., North Harbor City, Calif. 90710

Continuation-in-part of Ser. No. 873,030, Jan. 22, 1978, Pat. No. 4,175,222, which is a continuation of Ser. No. 720,319, Sep. 3, 1976, abandoned. This application Jul. 25, 1978, Ser. No. 928,032
The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.
Int. Cl.[2] H01H *35/40*
U.S. Cl. 200—159 R **15 Claims**



1. A pushbutton switch and actuator mechanism or electrically connecting a pair of conductors, each conductor having an end retained in said switch, and comprising:

a housing including a barrel with an axis and head portion generally transverse to said axis,

a cover secured to said head with said conductor ends secured, in electrically non-contacting relation, between said head and cover,

said head and cover including insulating means to prevent an electrical connection between said conductors through either said head or said cover,

a contact moveable along said axis for bridging said conductor ends for electrically connecting said conductors,

means mounting said contact for said axial movement to make or break said electrical connection,

a plunger axially slidable in said barrel and engaging said mounting means for projecting said mounting means in an axial direction,

aligned apertures axially extending through said moveable contact and said housing, respectively,

biasing means yieldably biasing said contact, mounting means and plunger for return to a retracted position in which position said contact bridges said conductors,

a ratchet mechanism on said housing and mounting means for retaining said mounting means in a projected position against the bias of said biasing means,

actuator means positioned within said axially aligned apertures for selectively stroking said plunger axially within said barrel,

said plunger transmitting axial motion to said mounting

means on a first stroke for operating said ratchet mechanism to retain said mounting means in a projected position at the conclusion of said stroke in which position said contact is out of engagement with said conductor ends,

said plunger transmitting axial motion to said mounting means on a second stroke for operating said ratchet mechanism to allow said biasing means to return said contact and mounting means to a retracted position, in which position said contact is in engagement with said conductor ends.

4,225,765

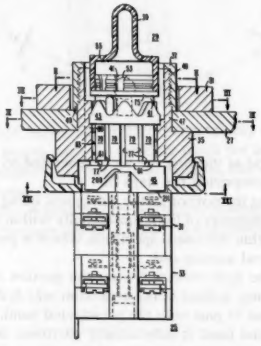
SWITCH STRUCTURE

Robert J. Johnston, Patterson Heights; Stephen G. Layciak, Brighton Township, Beaver County, and Stephen S. Dobrosielski, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 858,325, Dec. 7, 1977. This application Feb. 28, 1979, Ser. No. 16,243

Int. Cl.[2] H01H *19/02, 3/00*

U.S. Cl. 200—307 **2 Claims**



1. A pushbutton and rotary selector switch comprising an operator and at least one switch structure, the operator comprising a tubular housing and an actuator, the actuator being movable longitudinally and rotatably in the housing, an annular cam on the actuator, the switch structure having a movable contact operating member to effect opening and closing of a circuit through the switch structure, said member comprising a reciprocable plunger, the actuator comprising an annular end zone engageable with a portion of the end of the plunger to effect movement of the plunger when the actuator is moved longitudinally against the plunger, the annular cam being slidably mounted on the actuator to enable retraction of the cam when the actuator is moved longitudinally, the annular cam having a cam surface engaging another portion of the end of the plunger to effect movement of the plunger when the actuator is rotated, and means biasing the cam to the unretracted position on the actuator.

4,225,766

TOUCH CONTACT

Rolf Pfeifer, Erlangen, and Jörn Wimmer, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 5, 1979, Ser. No. 9,166

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 7814996

Int. Cl.[2] H01H *9/00*

U.S. Cl. 200—314 **2 Claims**

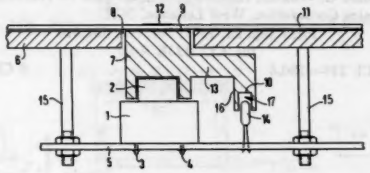
1. A light conducting cap for use with a short stroke switch mounted beneath a control panel, said cap having

a light transmissible touch surface;

a laterally extending arm terminating in a downwardly extending portion having a receptacle at a bottom thereof;

a light admissible surface forming a wall of said receptacle;

an engagement area for engaging a movable actuator for said switch for co-action of said cap and said actuator; and



an opaque outer surface to prevent external radiation when a light source received in said receptacle transmits light through said light admissible surface to said touch surface.

4,225,767

MICROWAVE OVEN HAVING UNEVEN BOTTOM WALL OVEN CAVITY

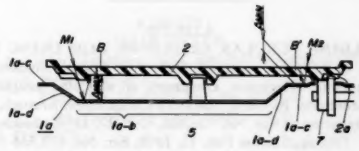
Takayoshi Hatanaka, Osaka; Tsuguharu Yakushiji, Sakai, and Kanji Tanaka, Yao, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1978, Ser. No. 957,159

Claims priority, application Japan, Nov. 4, 1977, 52/132957

Int. Cl.[2] H05B *9/06*

U.S. Cl. 219—10.55 F **12 Claims**



1. A microwave oven comprising:

a source of microwave energy for heating food;

a table means for carrying the food; and

an oven cavity having a bottom wall with an uneven surface for providing random reflection of the microwave energy, wherein the distance between the uneven surface of the bottom wall of the oven cavity and the table means is variable because of said uneven surface, thereby unifying the intensity of the microwave energy throughout the oven cavity so that the food positioned on the table means is exposed to uniform intensity of the microwave energy.

4,225,768

COATED ELECTRODE SUITABLE FOR THE WELDING OF GRAY CAST IRON PARTS

Horst Seifahrt, Lausanne, Switzerland, assignor to Castolin S.A., St. Sulpice, Switzerland

Filed Nov. 8, 1978, Ser. No. 958,601

Claims priority, application Switzerland, Nov. 8, 1977, 13572/77

Int. Cl.[2] B23K *35/30*

U.S. Cl. 219—76.14 **10 Claims**

1. A coated electrode suitable for the welding of gray cast iron consisting essentially of a core of iron or iron alloy with a coating thereon of a composition which on the dry weight basis contains 5% to 10% of a binder of an alkali metal silicate, 25% to 50% by weight of ferrovanadium containing 40% to 85% vanadium, 20% to 40% powdered iron, 15% to 20%

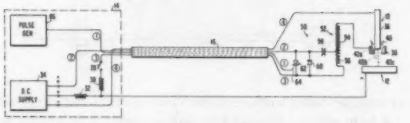
$BaCO_3$, 10% to 20% CaF_2, and 1% to 3% ferrosilicon containing 30% to 80% silicon.

4,225,769

PLASMA TORCH STARTING CIRCUIT

Raymond G. Wilkins, Hanover, N.H., assignor to Thermal Dynamics Corporation, West Lebanon, N.H.

Filed Sep. 26, 1977, Ser. No. 836,816
Int. Cl.[2] B23K *9/06*
U.S. Cl. 219—130.4 **8 Claims**



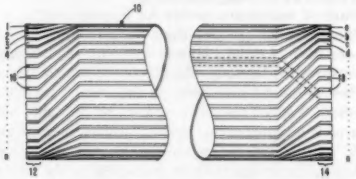
1. A plasma torch unit of the type having a power supply, a torch assembly having an electrode, a welding tip and means for providing an ionizable gas therebetween, the improvement comprising a pilot arc ignition circuit comprising first means for periodically applying a sufficiently large voltage between said electrode and said tip to periodically ignite a pilot arc, and second means for extinguishing said pilot arc between said periodic ignitions of said pilot arc, whereby the instantaneous power of said pilot arc is much greater than the average power of the pilot arc, said second means comprising means for supplying a half wave rectified AC voltage between said electrode and said welding tip.

4,225,770

WELDING TUBULAR ARMATURE TABS USING TIG

Edwin C. Moore, Longmont; Robert J. Rogers, Boulder, and Donald G. Wiechman, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 736,006, Oct. 27, 1976, abandoned.
This application Feb. 16, 1978, Ser. No. 878,536
Int. Cl.[3] B23K *9/00;* **H05B** *1/00;* **B21J** *13/08*
U.S. Cl. 219—137 R **4 Claims**



1. Welding apparatus for a workpiece having electrically conductive and non-conductive surfaces comprising in combination:

welding means having a welding electrode at a first electrical potential for generating an electrical welding arc;

positioning means operably associated with said welding means for positioning the workpiece in close proximity to the welding electrode;

first conductive means electrically connected between the conductive surface of the workpiece and a second electrical potential; and

a clamp operable for chilling the workpiece and as a second conductive means adjacent the non-conductive surface of the workpiece, said clamp supporting the workpiece and defining a second electrical conductive path to the second electrical potential, whereby said first conductive means and said clamp alternatively conduct current with the welding electrode so as to enable a continuous arc generation, wherein said clamp comprises:

a member including a plurality of sections with each section having a geometrical shape substantially equivalent to the workpiece;

means associated with each section of said member electrically connected to the second electrical potential;

means for joining each section to form the member; and

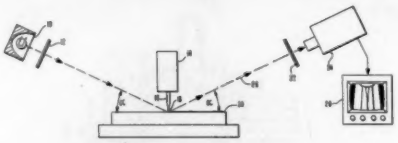
means for locking the member so as to encompass the workpiece.

4,225,771

METHOD AND APPARATUS FOR MONITORING ARC WELDING

James W. H. Justice, Murrysville, Pa.; Paul G. Kennedy, Annapolis, Md., and Robert C. Miller, Penn Hills, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 25, 1979, Ser. No. 33,062
Int. Cl.[2] B23K *9/00, 9/32;* **H04N** *7/18*
U.S. Cl. 219—137 R **6 Claims**



5. A method of viewing the weld generated by an arc welding system comprising the steps of:

illuminating the portion of the workpiece being welded with a given intensity of light substantially within a preselected band within the visual spectrum, which is generated from an external source; and

filtering the light reflected from the portion of the workpiece being welded to the area from which the weld is to be viewed to pass only the preselected band, wherein the preselected band is substantially narrower than the light spectrum generated by the welding arc.

4,225,772

GAS METAL ARC WELDING APPARATUS FOR REPAIRING MISALIGNED TUBE HOLES

F. Timothy Bacha, Crown Point, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 14, 1978, Ser. No. 896,125
Int. Cl.[3] B23K *9/12, 9/16*
U.S. Cl. 219—137.62 **5 Claims**

1. A gas metal arc welding apparatus for repairing relatively small diameter tube holes, including:

a bearing assembly having a rotatable pulley;

power means to rotate the pulley;

a welding torch supported by the bearing assembly for relative rotation therebetween and defining a longitudinally extending wire conduit;

a torch restraint for preventing rotation of the welding torch;

a nozzle assembly having

electrically conductive guide means defining a tubular passageway including a curved portion for directing the consumable wire toward the tube hole sidewall as the wire exits the nozzle assembly,

a gas nozzle annularly encircling the guide means for directing an inert gas into the tube hole, and

insulating means for thermally protecting the lower part of the guide means and for electrically insulating the guide means from the gas nozzle and the tube hole sidewall;

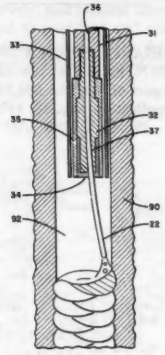
a connecting assembly having

an outer body secured to the bearing assembly for unitary rotation therewith and connected to the welding torch for

relative rotation therebetween, surfaces of the outer body defining a gas bore for transmitting the inert gas from the welding torch to the gas nozzle,

a sealing member disposed between the welding torch and the surfaces defining the gas bore for preventing the inert gas from passing therebetween,

means for connecting the gas nozzle with the outer body for supporting the gas nozzle, and



means disposed within the gas bore for rotatably connecting the guide means with the welding torch for transmitting the consumable wire and conducting an electric current therebetween, and

a vertical drive mechanism for vertically passing the nozzle assembly through the tube hole at a controlled rate.

4,225,773

CORED ELECTRODE

Igor K. Pokhodnya, ulitsa Chkalova, 41-a, kv. 25; Vladimir P. Ananin, ulitsa Solomenskaya, 41, kv. 83; Vladimir N. Golovko, ulitsa Vladimirskaya, 9, kv. 29, all of Kiev, and Sergei I. Denisov, bulvar Gvardeisky, 145, kv. 41, Zaporozhie, all of U.S.S.R.

Continuation of Ser. No. 790,998, Apr. 26, 1977, abandoned.
This application Apr. 2, 1979, Ser. No. 26,457
Int. Cl.[2] B23K *35/22*
U.S. Cl. 219—146.3 **2 Claims**

1. A continuous cored electrode for CO_2 welding of plain carbon and low alloy steels comprising a hollow low-carbon steel sheath member and a core consisting of granular material filling said hollow sheath member, said core consisting essentially of the following ingredients present in the following amounts:

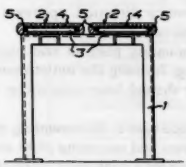
	Percent by weight of the total core
Feldspar	from about 1.8 to 10.4
Sodium fluosilicate	from about 1.6 to 10.0
Ferromanganese	from about 13.0 to 20.0
Ferrosilicon	from about 0.6 to 1.6
Reduced titanium concentrate	from about 53 to [80] 83.

4,225,774

METHOD AND INSTALLATION FOR HEATING OF SEATS, ESPECIALLY IN OUTDOOR ARENAS AND THE LIKE

Göte Taberman, Skytteholmsvägen 22, Solna, Sweden (S-171 44)

Filed Jan. 17, 1979, Ser. No. 4,282
Claims priority, application Sweden, Jan. 20, 1978, 7800748
Int. Cl.[2] H05B *1/00*
U.S. Cl. 219—217 **5 Claims**



1. A method of heating seats in wintersports arenas and other meeting places which are not continuously heated, said method comprising the steps of:

grouping the total number of seats into plural sections which are localized with respect to the expected demand for seats;

simultaneously heating all seats in any section by connecting heating means in said seats to a common source of energy; and

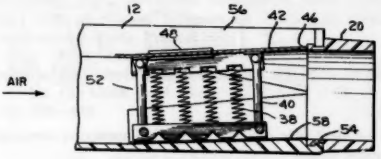
independently heating individual sections by selectively connecting each section to said common source of energy as each section becomes occupied.

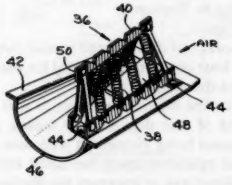
4,225,775

HAIR DRYER

Robert A. Carter, Asheboro, N.C., assignor to General Electric Company, New York, N.Y.

Filed Dec. 15, 1978, Ser. No. 969,858
Int. Cl.[3] H05B *3/02*; A45D *20/10*
U.S. Cl. 219—375 **3 Claims**





1. In a hair dryer having a first cup-shaped plastic housing with a duct of a substantially rectangular air inlet opening and generally tangential round outlet for a hose coupling to a soft bonnet, a sheet metal plate supporting a motor and components and a fan on opposite sides thereof with the fan adjacent the

round outlet, a second plastic cup-shaped housing facing said first and means securing said housings and plate therebetween with controlled air heating means in said outlet, the improvement comprising:

said air heating means formed with straight side elements forming a point in a longitudinal plane of said outlet and said side elements angularly disposed about said longitudinal plane to form a decreasing angle from a direction upstream of an air flow through said outlet to downstream of said air flow, and wherein the side elements taper downward from a direction upstream of said air flow toward downstream of said air flow,

a cup shaped mounting plate in said outlet and with said second housing, forming the outlet duct,

a trucated cone shaped base supporting said straight side elements,

means securing said base to the mounting plate, whereby the air heating means and mounting plate assembly direct the air flow and present a constantly increasing heater surface from square to round duct improving heat transfer to the outlet air.

4,225,776

ELECTRONIC DIGITAL TIME DISPLAY APPARATUS

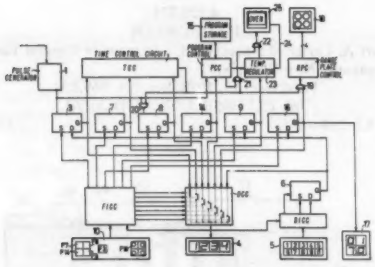
Alfred Meisner, and Werner F. Arnold, both of Nuremberg, Fed. Rep. of Germany, assignors to Firma DIEHL, Nuremberg, Fed. Rep. of Germany

Filed Jul. 14, 1977, Ser. No. 815,943

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631590

Int. Cl.[2] H05B 9/06

U.S. Cl. 219—492 **18 Claims**



1. An electronic digital time display apparatus comprising:

display means;

a time clock for the production of time signals;

a display control circuit for control of said display means and responsive to said time clock to cause the current time to normally be displayed;

a data input unit;

means for storage of data entered in said data input unit and having at least one output terminal for the presentation of data stored therein;

data input control means responsive to said data input unit for control of said data storage means, said data input control means being connected with said display control circuit and operative upon the initial entry of data into said data input unit to interrupt the display of the current time and cause the contents of said data storage means present at said output terminal to be displayed;

a plurality of function storage units connected in common along a single data line with the output terminal of said data storage means;

a plurality of function keys respectively associated with said function storage units for the assignment of data entered in said data input unit to a particular function storage unit; and

function input control means responsive to said function keys for entering the contents of said data storage means present at said output terminal in the function storage unit associated with a function key upon actuation of said key and for terminating the display of data and causing the current time to be displayed on said display means upon deactuation of said key.

4,225,777

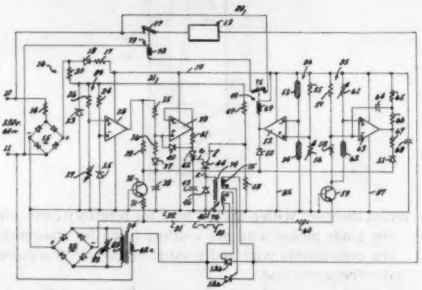
MULTIPLE VARIABLE PHASE CONTROL CIRCUIT

Mark Schindler, 835 N. Kings Rd., Los Angeles, Calif. 90069

Continuation-in-part of Ser. No. 808,552, Jun. 21, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 935,066

Int. Cl.[2] H05B 1/02

U.S. Cl. 219—497 **9 Claims**



1. A temperature control circuit for switching an alternating current for a controlled fraction of each half cycle to a water heater comprising:

a current charging circuit means including a summing capacitor which is charged thereby each half cycle;

a unijunction transistor having a threshold firing level;

a timing capacitor associated with said unijunction transistor;

a feedback circuit means coupled to sense the fraction of the alternating current supplied to the heater each half cycle and discharging said summing capacitor each half cycle in accordance therewith; and

a temperature comparing circuit means for comparing the temperature of the water heater with a desired set temperature and providing an output for further discharging said summing capacitor each half cycle as a function of the temperature difference;

said current charging circuit means providing for initially charging said timing capacitor each half cycle to a pedestal voltage level dependent on the residual charge on said summing capacitor and thereafter along a ramp whereby the phase angle at which the ramp reaches the threshold firing level of said unijunction transistor can be made to vary in accordance with the residual charge on said summing capacitor to thereby control the fraction of each half cycle that the alternating current is switched to the heater.

4,225,778

FLOW DETECTION SYSTEM

Iraj Ghahramani, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

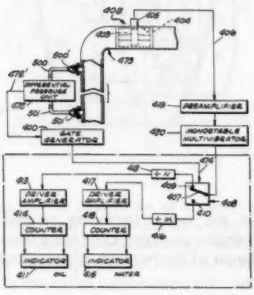
Filed Apr. 23, 1979, Ser. No. 32,557

Int. Cl.[3] G06M 3/08

U.S. Cl. 235—92 FL **2 Claims**

1. A flow detection system, said system comprising: conduit means to contain the flow of a mixture of first and second fluids having different densities; flow means connected with said conduit means to produce pulses at a rate proportional to the

volume flow rate of said mixture; mean density means having an output lead and being connected with said conduit means to produce an electric current I_m in said output lead proportional to the mean density of said mixture; first and second constant current circuits connected from said mean density means output lead and having respective first and second gating leads; a capacitor of capacitance C connected from said mean density means output lead to a point of reference potential; a bistable circuit having first and second output leads and adapted to generate first and second bilevel signals on said first and second leads thereof, respectively, said bistable circuit first and second leads being connected to said first and second gating leads, respectively, to cause the current I_w to the first circuit to be approximately constant and proportional to the density of said



first fluid, and, at the same time, to cause the current to said second circuit to be zero, said bistable circuit causing the current I_o to said second circuit to be approximately constant and proportional to the density of said second fluid, and, at the same time, to cause the current to said first circuit to be zero, said bistable circuit being constructed to change states upon the arrival of said capacitor at voltages K_1 and K_2 of different respective magnitudes; pulse receiving means; and a switch connected from said flow means and having a control lead, said switch being actuable over said control lead to deliver a portion of said pulses over a period of time to said pulse receiving means, one of said bistable circuit output leads being connected to said switch control lead to close said switch for said period, said period being one of the following two periods:

$$T_w = \frac{C(K_2 - K_1)}{I_m - I_w}$$

$$T_o = \frac{C(K_2 - K_1)}{I_o - I_m}$$

4,225,779

BANKING APPARATUS AND METHOD

Jyunji Sano, Ohtsu, and Kuniaki Okazaki, Moriyama, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

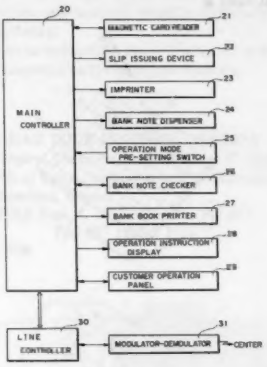
Filed Jun. 5, 1978, Ser. No. 912,739

Claims priority, application Japan, Jun. 10, 1977, 52/69234; Jun. 10, 1977, 52/69235

Int. Cl.[3] **G06K** *17/00;* **G06F** *15/30*

U.S. Cl. 235—379 **13 Claims**

1. A banking apparatus comprising a common housing accommodating a plurality of transaction devices some of which have at least one common operative device, means for presetting a pattern of transactions representing a combination of transactions processable according to the status of said plurality of transaction devices, means connected with said means for presetting said pattern of transactions for generating a first predetermined signal pattern representative of the status of said plurality of transaction devices, means for entering a customer selected transaction into said apparatus, means connected with said means for entering for generating a second predetermined signal pattern representative of said customer selected transaction, means connected with said first and second means for generating for checking for the presence or absence of a predetermined relation between said first and second predetermined signal patterns and for judging whether



said customer selected transaction is processable and means connected with said means for checking and with said plurality of transaction devices for operating a selected one of said transaction devices to execute said customer selected transaction which has been judged to be available by said judging means.

4,225,780

METHOD AND DEVICE FOR SUPERPOSING A MODIFIABLE MAGNETIC CODE ON A FIXED BAR CODE

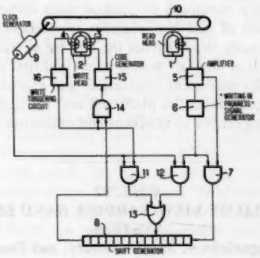
Michel Jacoub, Paris, and Gerard Nourigat, St. Remy les Chevreuse, both of France, assignors to Compagnie Generale d'Automatisme, Paris, France

Filed Dec. 19, 1978, Ser. No. 971,123

Claims priority, application France, Jan. 11, 1978, 78 00638

Int. Cl.[3] **G06K** *7/08, 19/06;* **G11B** *5/02, 5/09*

U.S. Cl. 235—449 **7 Claims**



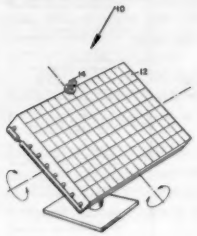
1. A method of coding comprising the step of superposing a modifiable magnetic code on a fixed code consituted by a succession of magnetized bars separated from one another by spaces, wherein said step of superposing a modifiable magnetic code on a fixed code comprises the step of magnetizing the bars in two different directions by a write head.

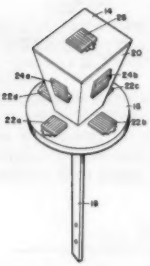
4,225,781

SOLAR TRACKING APPARATUS

Burrell E. Hammons, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 26, 1979, Ser. No. 15,256
Int. Cl.³ F24J *3/02*; G01J *1/20*
U.S. Cl. 250—203 R **4 Claims**





1. Apparatus for orienting a solar collector with respect to the sun comprising: a base member, support means projecting upwardly from said base member, a first photocell carried by said support means and spread above said base member for unobstructed disposition to the sun, a first plurality of photocells each disposed toward the sun carried by said base member and circumferentially spaced from each other about said support means and said first photocell, a second plurality of photocells carried by said support means located intermediate said first photocell and the photocells carried by said base member and inclined toward the latter and away from said first photocell for shading thereof from the sun when said first photocell is in essentially maximum orientation with respect to the sun, each photocell of said first plurality of photocells being partially and equally shaded from the sun by at least one of said first photocell or support means when said first photocell is in said essentially maximum orientation, and electrical means for receiving signals from the photocell and for generating steering signals responsive to shadings and exposures of the photocells.

4,225,782

WIDE FIELD OF VIEW-NARROW BAND DETECTION SYSTEM

John D. Kuppenheimer, Jr., Tewksbury, and Paul F. Murphy, Medford, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

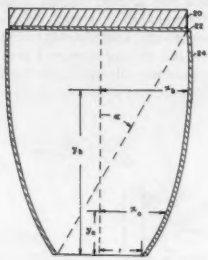
Filed Aug. 14, 1978, Ser. No. 933,315
Int. Cl.² G01J *3/46*
U.S. Cl. 250—216 **13 Claims**

1. A wide field of view-narrow band detection system, comprising:

a radiation responsive member;

an interference filter disposed on said radiation responsive member to filter any radiation applied to said member; and

an angle converting cone arranged adjacent said interference filter to simultaneously control the field of view,



throughput and angles impinging on said interference filter, said angle converting cone being open at both ends with the larger of the two ends adjacent said interference filter.

4,225,783

DETERMINATION OF MICROBIAL CELLS IN AQUEOUS SAMPLES

William J. Palin, Gurnee, and Timothy C. Miller, Vernon Hills, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 24, 1978, Ser. No. 927,323
Int. Cl.² C12Q *1/29*; G01N *21/00, 33/48*
U.S. Cl. 250—302 **2 Claims**

1. A method for enumerating bacterial cells in urine comprising adding to a urine sample an effective bacterial cell labeling amount of fluorescent dye and a known number per ml of urine of monodispersed fluorescently labeled beads of about cell size and determining the ratio of fluorescently labeled bacterial cells to fluorescently labeled beads.

4,225,784

COVALENTLY BOUND BIOLOGICAL SUBSTANCES TO PLASTIC MATERIALS AND USE IN RADIOASSAY

M. James Barrett, Saratoga, Calif., assignor to Smith Kline Instruments, Inc., Philadelphia, Pa.

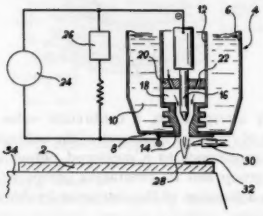
Continuation-in-part of Ser. No. 511,952, Oct. 4, 1974, Pat. No. 4,001,583. This application Jun. 17, 1976, Ser. No. 696,959
Int. Cl.² G01T *1/161*
U.S. Cl. 250—303 **2 Claims**

1. A method for indirectly determining the level of thyroid hormone in a biological fluid which comprises detecting the degree of unsaturation of thyrobinding globulin in said biological fluid by employing immobilized hormone specific protein.

4,225,785
PROCESS FOR THE PRODUCTION OF A SENSITIVE PLATE FOR AN EXOELECTRON DOSIMETER

Maurice Ducos, Piolenc; Pierre Manfredi, Orange; Maurice Petel, Bourg-la-Reine, and Guy Portal, Massy, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Apr. 20, 1979, Ser. No. 32,015
Claims priority, application France, Apr. 27, 1978, 78 12511
Int. Cl.[2] G01J 5/10; G01T 1/115; B05D 3/06
U.S. Cl. 250—336 19 Claims



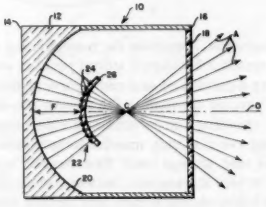
1. A process for the production of a sensitive plate for an exoelectron dosimeter by producing on a support a deposit of a mixture of two compositions constituted on the one hand by a substance having traps for the electrons and able to emit exoelectrons by thermal or optical stimulation and on the other by a substance having a good ionic conductivity, wherein it comprises making a homogeneous mixture of the powders constituting the two said compositions, and spraying said powder mixture by means of a device for spraying said mixture of two compositions atomization to obtain a deposit which adheres to the support.

11. An exoelectron dosimetry device, wherein it comprises a support and on the latter a sensitive plate adhering to said support, the plate comprising a mixture of a substance having traps for the electrons and which is able to emit exoelectrons by thermal or optical stimulation and by a substance having a good ionic conductivity.

4,225,786
INFRARED DETECTION SYSTEM

David E. Perlman, Rochester, N.Y., assignor to Detection Systems, Inc., Fairport, N.Y.

Continuation-in-part of Ser. No. 786,667, Apr. 11, 1977, abandoned. This application Sep. 15, 1978, Ser. No. 942,659
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—342 14 Claims



1. In an infrared radiation-sensitive detector comprising:

(a) a plurality of infrared radiation-sensitive elements arranged to form an elongated array, each of said elements comprising first and second spaced electrodes between which a pyroelectric material is positioned, said elements being operative to produce a voltage proportional to the rate of change of infrared radiation incident thereon; and

(b) means connecting said elements electrically in parallel; the improvement wherein

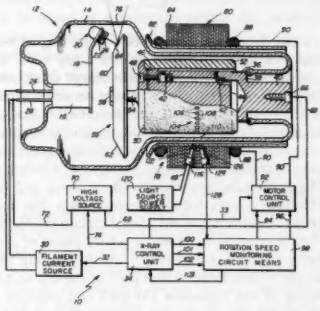
said pyroelectric material of each element is polarized to a polarity opposite that to which the pyroelectric material of adjacent elements in said array is polarized, whereby the voltages produced by adjacent elements which are subjected to the same change in incident radiation are substantially equal in amplitude and opposite in polarity.

2. The apparatus defined by claim 1 wherein said pyroelectric material comprises polyvinylidene fluoride.

4,225,787
X-RAY TUBE CONTROL SYSTEM

Jonathan S. Shapiro, Greenwich, and William P. Holland, West Redding, both of Conn., assignors to The Machlett Laboratories, Inc., Stamford, Conn.

Filed Nov. 2, 1977, Ser. No. 847,877
Int. Cl.[2] H05G 1/10
U.S. Cl. 250—406 8 Claims



1. In combination:

an x-ray tube including a tubular envelope having therein an electron emitting cathode disposed in spaced alignment with a portion of a rotatable anode target attached to a rotor of an induction motor;

a stator of the motor disposed externally of the envelope and encircling the rotor, the stator including a plurality of interconnected coils supported on spaced pole pieces;

motor control means electrically connected to the coils of the stator for sending an electrical current therethrough and producing rotational movement of the anode target;

rotation sensing means coupled to the rotor for sensing rotational movement of the anode target and producing corresponding electrical output signals;

tube control means electrically connectable to the cathode and the anode target of the tube for selecting parametric operating values of the tube, including X-ray tube current, X-ray tube voltage, and exposure time interval, and producing corresponding electrical output signals; and

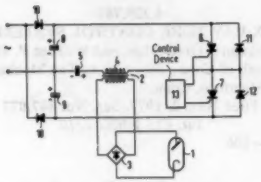
speed monitoring circuit means electrically connected to the tube control means, the rotation sensing means, and the motor control means for regulating the rotational speed of the anode target in accordance with the output signals received from the tube control means and the rotation sensing means,

the speed monitoring circuit means including desired speed determining circuit means electrically connected to the tube control means for combining the electrical signals corresponding to selected values of X-ray tube current, X-ray tube voltage, and exposure time interval, and in accordance therewith producing output signals indicative of a proportionate minimum speed and a proportionate optimum speed range of rotation for the anode target.

4,225,788
X-RAY DIAGNOSTIC GENERATOR COMPRISING AN INVERTER FEEDING THE HIGH VOLTAGE TRANSFORMER

Kurt Franke, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 15, 1978, Ser. No. 960,859
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802450
Int. Cl.[2] H05G *1/30*
U.S. Cl. 250—408 **1 Claim**



1. An x-ray diagnostic generator comprising an x-ray tube, a high voltage transformer feeding the x-ray tube, an inverter connected to the input of the high voltage transformer, and a d.c. voltage source comprising power rectifier means feeding the inverter, characterized in that the inverter has a circuit (**6, 7**) for the alternate supply of voltage from the respective poles of the d.c. voltage source (**8, 9**), and said generator further comprising a capacitor (**5**) and a primary winding (**4**) of the high voltage transformer connected in series and forming an LC oscillatory circuit for connection with the d.c. voltage source (**8, 9**) under the control of said circuit (**6, 7**),, said circuit having first means (**6**) operable in a first phase of operation of the invertor for connecting said primary winding (**4**) and said capacitor (**5**) in series with a first pole of the d.c voltage source for charging of the capacitor (**5**) with one polarity from said first pole of the d.c. voltage source and with the capacitor charging current flowing in one direction in the primary winding (**4**), and said circuit having second means (**7**) operable in a second phase of operation of the inverter for connecting said primary winding (**4**) and said capacitor (**5**) in series with a second pole of said d.c. voltage source for charging of the capacitor (**5**) with an opposite polarity opposite to said one polarity from said second pole of the d.c. voltage source and with the capacitor charging current during charging of said capacitor (**5**) to said opposite polarity producing current in said primary winding (**4**) flowing in the opposite direction opposite to said one direction.

4,225,789
DEVICE FOR COMPUTER TOMOGRAPHY

Cornelius B. J. D. Albrecht, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

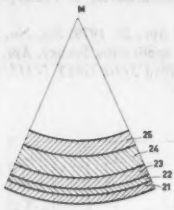
Filed Aug. 30, 1978, Ser. No. 938,268
Claims priority, application Netherlands, Sep. 14, 1977, 7710052
Int. Cl.[2] A61B *6/00, 6/02*; G01D *18/00*; G12B *13/00*
U.S. Cl. 250—445 T **8 Claims**

1. A device for computed tomography examinations comprising:

X-ray source means which irradiate a patient position from different directions;

a plurality of X-ray detectors; and

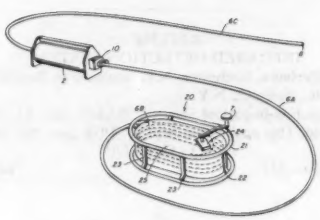
signal processing network means, including a memory, which process output signals from the detectors to form computer input signals, the signal processing network means including comparator means which function to compare a first group of output signals from the detectors, which are obtained during examination of a patient with a second group of output signals from the detectors, which are obtained during radiation of a number of layer thicknesses of a calibration material, the second group being stored in the memory, the calibration material having substantially the same X-ray absorption properties as human tissue, the network means functioning to determine, by interpolation, a calibration value which is a function of the layer thickness of the calibration material which corresponds to a measured output signal in the second group and to generate a computer input signal which is a function of the determined calibration value.



4,225,790
STORAGE REEL ASSEMBLY

George W. Parsons, Jr., North Reading, and Riccardo A. Drainoni, Woburn, both of Mass., assignors to Technical Operations, Incorporated, Boston, Mass.

Filed Nov. 27, 1978, Ser. No. 964,077
Int. Cl.[2] G21F *5/02*
U.S. Cl. 250—497 **10 Claims**

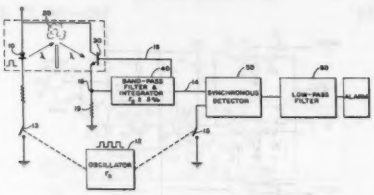


1. In radiographic apparatus for manipulating a quantity of radioactive material between a stored position and a use position including a capsule of said radioactive material, a storage unit with a passage through it for storing the capsule in the passage and shielding the surrounding environment from the stored radioactive material, manipulating means for location remote from said storage unit, first flexible conduit means connectible to said storage unit between one end of said passage and the manipulating means, and flexible elongated drive means movable within said conduit means and said passage for moving said capsule between a stored position and a use position under control of said manipulating means, the improvement comprising: reel means mounting said manipulating means and providing a form for coiling said conduit means externally around said reel means, and second conduit means permanently coiled on said reel means for housing a supply of said drive means.

4,225,791
OPTICAL SMOKE DETECTOR CIRCUIT

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 1, 1979, Ser. No. 16,697
Int. Cl.[3] H01J 40/14
U.S. Cl. 250—574 4 Claims



1. Optical smoke detector apparatus comprising:

a source of light pulses having a pulse rate of f_o within a smoke sensing chamber;

phototransistor light pulse sensing means in said chamber, said phototransistor having collector, emitter and base electrodes, said phototransistor being energized by a DC source connected to said collector electrode;

a resistance connected from said emitter electrode to a reference potential, said phototransistor providing electrical pulses at said emitter corresponding to the sensed light pulses;

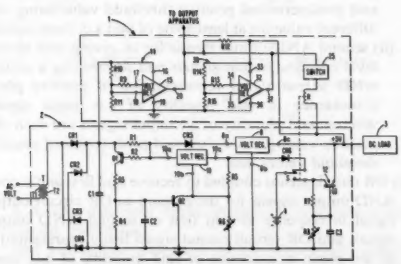
a band-pass active filter tuned to the pulse rate frequency f_o, and having an input terminal connected to said emitter electrode to receive electrical pulse signals from said phototransistor, and having an output terminal for transmitting the electrical pulse signals to utilizing apparatus and;

means for maintaining constant the phototransistor gain comprising a phototransistor bias and low pass current feedback path connected from said band pass filter to said base electrode to maintain substantially constant the DC emitter current over wide ranges of ambient light to which the phototransistor is exposed.

4,225,792
DETECTOR CIRCUIT

Robert J. Fahey, Burlington, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 26, 1978, Ser. No. 973,218
Int. Cl.[3] H02J 9/06
U.S. Cl. 307—66 10 Claims



1. A detector circuit for use with a dc power supply circuit for detecting the loss of dc power to a dc load and for detecting a low dc voltage condition of a standby storage device employed to power the dc load following a loss of dc power to the dc load, said dc power supply circuit being operative to supply dc voltages to the dc load and to the standby storage device for utilization by the dc load and for establishing a dc voltage across the standby storage device, said detector circuit comprising:

transfer circuit means coupled to the standby storage device and to the dc load and adapted to receive dc voltages supplied to the dc load by the dc power supply circuit and the standby storage device, said transfer circuit means having a first operating state during which it couples the standby storage device and the dc voltage thereacross to the dc load and a second operating state during which it uncouples the standby storage device and the dc voltage thereacross from the dc load;

first voltage monitoring circuit means including power failure detector circuit means coupled to a predetermined point in the dc power supply circuit and to the transfer circuit means and having a first terminal at a predetermined reference potential and a second terminal, said power failure detector circuit means being operative to examine a dc voltage at the predetermined point in said dc power supply circuit and operative when the dc voltage examined thereby has a value less than a predetermined value indicating a loss of power to the dc load to place the second terminal at a potential above the predetermined reference potential of the first terminal;

said transfer circuit means being operative in response to the placement of the second terminal of the power failure detector circuit means above the reference potential of the first terminal to receive the dc voltage then present at the dc load and, in response to said dc voltage, to operate in its first state and thereby couple the standby storage device and the dc voltage thereacross to the dc load, said transfer circuit means being thereafter operative to receive the dc voltage coupled from the standby storage device to the dc load and, in response thereto, to continue to operate in its first state and thereby maintain the standby storage device and the dc voltage thereacross coupled to the dc load; and

second voltage monitoring circuit means coupled to the dc load and to the transfer circuit means and arranged to examine the dc voltage coupled from the standby storage device to the dc load following the aforesaid operation of the first voltage monitoring circuit means and transfer circuit means, said second voltage monitoring circuit means being operative when the dc voltage monitored thereby has a value less than a predetermined value to cause the transfer circuit means to operate in its second state whereby the standby storage device and the dc voltage thereacross are uncoupled from the dc load.

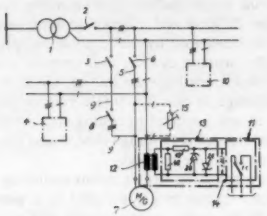
4,225,793
ARRANGEMENT FOR MONITORING A CURRENT NETWORK

Horst Philipsen, Elmshorn, Fed. Rep. of Germany, assignor to Ad. Strüver KG (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,294
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 7721674[U]; Jan. 30, 1978, 2803966
Int. Cl.[2] H02J 9/08
U.S. Cl. 307—68 8 Claims

1. An arrangement for monitoring an electric current network, which includes: at least one three-phase synchronous machine connectable to the electric network to be monitored and provided with a neutral wire, an installation comprising energy storage means operable instantaneously and arranged in operative connection with said synchronous machine, a monitoring device arranged between the neutral point of said at least one synchronous machine and the neutral wire of the network, said monitoring device comprising an $M_f$current converter and a load burden means serially arranged with regard to each other and a frequency relay for ascertaining the zero axis crossings of the dropping voltage on said load burden

means, and switch means associated with said network, said drop of said zero axis crossing frequency below a pre-set value



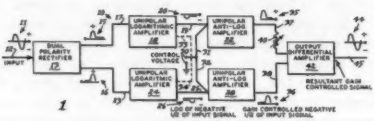
being operable to emit a signal for the power failure of said network.

4,225,794

VOLTAGE CONTROLLED AMPLIFIER

Paul C. Buff, 2817 Erica Pl., Nashville, Tenn. 37204

Filed Sep. 25, 1978, Ser. No. 945,432
Int. Cl.³ G06G 7/12
U.S. Cl. 307—229 **9 Claims**



1. A voltage controlled amplifier apparatus comprising:

(a) input means for dividing the positive and negative portions of the waveform of an A.C. input signal into first and second unipolar signals, respectively,

(b) a first unipolar log amplifier circuit connected to said input means to receive only said first unipolar signal and to produce a first log signal logarithmically related to said first unipolar signal,

(c) a second unipolar log amplifier circuit connected to said input means to receive only said second unipolar signal and to produce a second log signal logarithmically related to said second unipolar signal,

(d) a first unipolar anti-log amplifier circuit having its input connected to the output of said first unipolar log amplifier circuit,

(e) a second unipolar anti-log amplifier circuit having its input connected to the output of said second unipolar log amplifier circuit,

(f) means for applying a gain control signal to both said first log signal and said second log signal to produce a first output signal at the output of said first unipolar anti-log amplifier circuit anti-logarithmically related to the sum of said gain control signal and said first log signal, and to produce a second output signal at the output of said second unipolar anti-log amplifier circuit anti-logarithmically related to the sum of said gain control signal and said second log signal, and

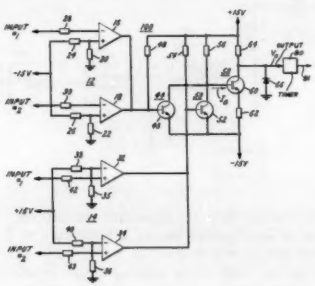
(g) output means for combining said first and second output signals to produce a gain-controlled resultant signal reconstituting the original waveform of said input signal.

4,225,795

COINCIDENCE CIRCUIT FOR A PROTECTIVE RELAY CIRCUIT

Marvin F. Keeney, Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed May 30, 1978, Ser. No. 911,004
Int. Cl.² H03K 5/13
U.S. Cl. 307—232 **11 Claims**



1. In a protective relay circuit of the type employing a timer circuit and, a coincidence circuit for receiving a plurality of a.c. input signals and developing a coincidence output signal representative of the phase coincidence of the plurality of a.c. input signals, which coincidence circuit comprises:

(a) negative signal processing means including:

(i) first level detector circuit means for developing a separate first level detector output signal for each one of said plurality of a.c. input signals when each one of said plurality a.c. input signals is of a negative value greater than a predetermined negative threshold value, said predetermined negative threshold value being of a different value for at least some of said a.c. input signals,

(ii) first AND circuit means for receiving said first level detector output signals and developing a first AND output signal representative of negative phase coincidence of said plurality of a.c. input signals wherein said plurality of a.c. input signals are each of a negative value greater than said predetermined negative threshold values,

(b) positive signal processing means including:

(i) second level detector circuit means for developing a separate second level detector output signal for each one of said plurality of a.c. input signals when each one of said plurality of a.c. input signals is of a positive value greater than a predetermined positive threshold value, said predetermined positive threshold value being of a different value for at least some of said a.c. input signals,

(ii) second AND circuit means for receiving said second level detector output signals and developing a second AND output signal representative of positive phase coincidence of said plurality of a.c. input signals wherein said plurality of a.c. input signals are each of a positive value greater than said predetermined positive threshold values, and

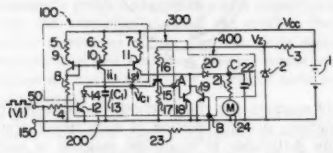
(c) OR circuit means coupled to receive said first and second AND output signals for developing an OR circuit output signal in response to said first or second AND output signal, said OR circuit output signal being representative of the phase coincidence of said plurality of a.c. input signals wherein said predetermined negative and positive threshold values are exceeded for the respective negative and positive portions of said a.c. input signals, said OR circuit output signal being coupled to a timer circuit which measures the duration of said OR circuit output signal and develops an output signal when the phase coincidence occurs for a predetermined minimum time.

4,225,796

FREQUENCY-TO-CURRENT CONVERSION CIRCUIT

Tomoatsu Makino, Okazaki; Yoshio Hirano, Anjo, and Katsuteru Miwa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 7, 1978, Ser. No. 967,497
Claims priority, application Japan, Feb. 14, 1978, 53-16129
Int. Cl.[3] H03K *1/08*
U.S. Cl. 307—261 10 Claims



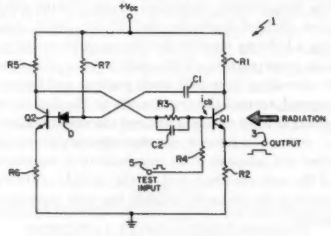
1. A frequency-to-current conversion circuit comprising:
input means for receiving a train of pulse signals;
current supply means for supplying first and second constant electric currents;
a capacitor;
control means for charging said capacitor by said first constant current in response to one of leading and trailing edges of said pulse signals and discharging said capacitor in response to the other of leading and trailing edges of said pulse signals;
comparison means for comparing charged voltage produced across said capacitor with a predetermined voltage; and
output means for deriving said second constant current during constant intervals of time determined by subjecting said pulse signals and output signals of said comparison means to a logic operation.

4,225,797

PULSE GENERATOR CIRCUIT TRIGGERABLE BY NUCLEAR RADIATION

Paul B. Fredrickson, Sudbury, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 2, 1978, Ser. No. 912,133
Int. Cl.[2] H03K *3/00*
U.S. Cl. 307—278 12 Claims



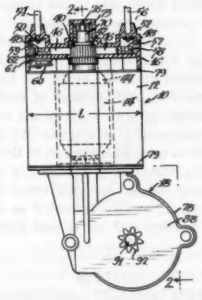
1. A pulse generator circuit triggerable by a pulse of nuclear radiation, comprising:
first and second transistors of the same conductivity type and each having electrodes including a base, emitter and collector, the physical and electrical characteristics and parameters of the first and second transistors being such that the first transistor has a sensitivity to radiation substantially greater than the sensitivity to radiation of the second transistor;
an output terminal connected to a predetermined electrode of the first transistor;
feedback circuit means interconnecting the collector of the first transistor and the base of the second transistor;
biasing means coupled to predetermined electrodes of the first and second transistors and operative in the absence of the first and second transistors being exposed to a pulse of nuclear radiation to bias the first transistor into a first conducting state and to bias the second transistor into a second, opposite conducting state;
said first transistor being operative in response to being exposed to a pulse of nuclear radiation to switch from the first conducting state to the second conducting state and to establish an induced current in the collector-base junction thereof, and said second transistor being operative in response to being exposed to the pulse of nuclear radiation to establish an induced current in the collector-base junction thereof, the value of the induced current established in the collector-base junction of the first transistor being substantially greater than the value of the induced current established in the collector-base junction of the second transistor;
said feedback circuit means being operative when the first transistor is caused to operate in the second conducting state to cause the second transistor to switch from the second conducting state to the first conducting state; and
said first transistor being operative during the time that it operates in its second conducting state to produce an output signal at the output terminal connected thereto indicating that the pulse generator circuit and the first transistor included therein have been exposed to a pulse of nuclear radiation.

4,225,798

PERMANENT MAGNET MOTOR

Edward L. Barrett, 506 Malden Ave., LaGrange Park, Ill. 60525

Continuation-in-part of Ser. No. 638,591, Dec. 8, 1975, abandoned. This application Jan. 13, 1978, Ser. No. 869,317
Int. Cl.[2] H02K *23/04*
U.S. Cl. 310—154 2 Claims



1. A dynamo-electric machine comprising an armature and a permanent magnet field structure including two permanent magnets and two field shoes each having two portions which mate with associated ones of said magnets and an arcuate surface between said portions which forms one side of an air gap between the field shoe and the armature, the improvement residing in the field shoes being configured to direct magnetic flux from the permanent magnets associated therewith to said arcuate surfaces in such a manner that the magnetic lines of force emanating from the arcuate surfaces and extending through the armature are uniformly distributed over the armature with substantially uniform intensity, said arcuate surface of each said field shoe extending from the portions of said field shoe which mate with said magnets to a plane situated approximately midway between said magnets, each field shoe progressively increasing in thickness to both sides of said plane from

the area adjacent said plane to adjacent said portions of the field shoe which mate with said magnets, and then progressively decreasing in thickness from those portions to ends of the field shoe, the thickness of the field shoe between said area adjacent said plane and the ends of the field shoe, and therefore the cross-sectional area thereof, varying substantially in proportion to the density of magnetic flux carried by the field shoe at points therealong, so that the density of magnetic flux is substantially constant throughout the field shoe and the field shoe provides a substantially uniform intensity distribution of magnetic flux across said armature surface, said arcuate dimension of each said field shoe being nonconcentric with the periphery of said armature and defining between said arcuate surface and said armature periphery an air gap which progressively increases in width to both sides of said plane from a minimum dimension in the area adjacent said plane to a greater dimension in the areas adjacent said portions of the field shoe which mate with said magnets, said width of said air gap from said plane to said mating portions increasing substantially in accordance with the length of the field shoe therealong, whereby the reluctance of said air gap from said areas adjacent said mating portions to said area adjacent said plane progressively decreases to encourage a flow of flux through said field shoe from said areas adjacent said mating portions to said area adjacent said plane, the varying width of said air gap assisting in the establishment of a uniform flux distribution through the armature, each portion of said arcuate surface of each said field shoe to each side of said plane being the mirror image of the other, each shoe having at its two ends a flat surface extending parallel to a diameter of the armature, intersecting the arcuate surface, being substantially parallel to the corresponding surfaces of the other shoe and comprising said portions of mating with said magnets, said magnets being rectangular and abutting flush against respective flat surfaces of said shoes, the dimensions of said magnets abutting against said surfaces and along a diameter of the armature being greater than the dimensions of said magnets perpendicular to said surfaces, said magnets being elongate in the directions parallel to said surfaces of said shoes, and said magnets and shoes defining a field structure that is relatively elongate in the direction parallel to the surfaces of said shoes and to a diameter of the armature and of minimum width in the direction transverse to the surfaces of said shoes, and including a commutator at one axial end of said armature, a brush assembly mounted at the corresponding end of said field structure, said brush assembly comprising two brushes and two brush holders mounted along the long dimension of said structure parallel to said surfaces of said shoes and to a diameter of the armature with each brush and brush holder situated adjacent and parallel to a respective one of said magnets, the dimension of each said magnet in the long dimension of said structure accommodating a relatively long brush and a relatively long brush holder, two electrical terminals, and a bi-metallic overload protector connected in series circuit between one of said brushes and one of said electrical terminals.

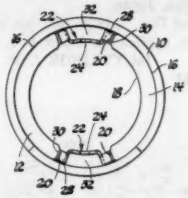
4,225,799

FIELD MAGNET ASSEMBLY

Macram N. Bishai, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 11, 1979, Ser. No. 56,774
Int. Cl.[3] H02K *21/28*
U.S. Cl. 310—154 **4 Claims**

1. A field magnet assembly for a permanent magnet electric motor comprising, a cylindrical frame of magnetic material, a plurality of radially magnetized arcuate magnets having outer cylindrical surfaces mating with and seated against the inner circumferential surface of said cylindrical frame, each magnet having circumferentially spaced substantially planar sidewalls, and a spring clip disposed in said frame between the sidewalls of adjacent magnets, each spring clip having an arcuate base portion substantially coextensive with the inner circumferential surface of each magnet so as to define therewith a cylindrical envelope for receiving an armature and a plurality of spring arms extending from opposite sides of said base portion, each spring arm having a radially oriented portion adjacent the base portion and an integral circumferentially extending portion terminating in an axially oriented face abutting the sidewall of



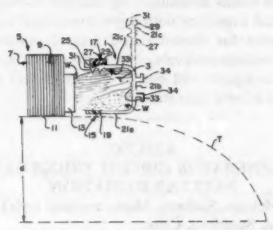
one of said magnets, the circumferentially extending portion and the radially oriented portion of each spring arm being sequentially deflectable to retain the magnets in assembled relation with the frame.

4,225,800

MEANS FOR HOLDING THE END TURNS OF ELECTRIC MOTOR STATOR WINDINGS

Adriano Magnaghi, Mozzate, Italy, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 10, 1978, Ser. No. 949,626
Claims priority, application Italy, Nov. 23, 1977, 29933 A/77
Int. Cl.[2] H02K *3/46*
U.S. Cl. 310—260 **19 Claims**



1. Means for holding end turns of the stator windings of a dynamoelectric machine in a desired position or arrangement, said end turns being arranged in a generally circular pattern around the longitudinal centerline of the dynamoelectric machine when viewed from the end of the latter, said means comprising a holding member having an inner portion adapted to fit on an inner surface of the end turns, a plurality of web members extending from said inner portion and being adapted to be wrapped around the outer ends of the end turns of the windings and at least partially around the outer surfaces of the windings, and a securement member separate from said holding member and adapted to fit over said web members on the outside of the web members and on the outside of the end turns of the windings for securely holding the web members against the end turns.

4,225,801

ELECTROSTATIC MOTOR

Charles M. Parker, Jr., 40-29 205th St., Bayside, N.Y. 11361

Filed May 15, 1979, Ser. No. 39,402
Int. Cl.[2] H02N *1/00*
U.S. Cl. 310—308 **5 Claims**

1. An electrostatic motor comprising:

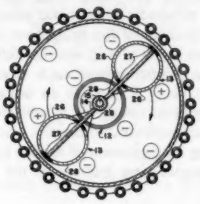
(a) an outer stator comprised of an electrically conductive cylindrical enclosure of circular cross section, dielectric material surrounding the exterior of said enclosure, a parallel array of electrically conductive cylindrical tubes

coextensive with the longitudinal axis of said enclosure and positioned by said dielectric material uniformly about the periphery of said enclosure and spaced apart therefrom, said array of tubes being electrically interconnected so that all the tubes can be made to possess a charge of the same polarity,

(b) stationary support means engaging said outer stator at each extremity thereof and disposed in a manner substantially perpendicular to said axis,

(c) an internal stator comprised of two identical circular cylindrical segments of electrically conductive material sequentially positioned coaxially with respect to said outer stator and substantially within the confines thereof, the exterior extremities of said segments being supported by attachment to said stationary support means, and means adapted to convey an electric charge of same polarity to said segments,

(d) a drive shaft coaxially positioned with respect to said internal and outer stators, supported for rotative movement by said stationary support means, and having electrically conductive paths associated therewith, and



(e) a rotor member adapted to revolve about said longitudinal axis comprising rotative support means centrally attached to said drive shaft and extending perpendicularly therefrom at a site between the cylindrical segments of said internal stator, at least two drive assemblies held by said rotative support means at equiangular dispositions about said axis, each drive assembly comprising two facing half cylinders coextensive with said drive shaft, fabricated of electrically conductive material and separated therebetween by insulative material extending perpendicularly from said rotative support means and substantially coplanar with said longitudinal axis, and means associated with said rotative support means to supply electrical charge of opposite polarities to the half cylinders of a given drive assembly, the polarities of charges on the half cylinders of one drive assembly with respect to the next adjacent drive assembly being such that alternating positive and negative charges are provided sequentially in a circular locus about said longitudinal axis,

whereby rotational movement is imparted to said rotor member when electrical charges of the same polarity are applied to said internal stator and outer stator.

4,225,802

PIEZOELECTRIC KNOCKING DETECTOR FOR INTERNAL COMBUSTION ENGINE

Yutaka Suzuki, Nishio; Osamu Ito, Toyota; Nobuhito Hobo, Inuyama; Kenji Goto, Susono; Daisaku Sawada, Susono; Takashi Shigematu, Susono, and Yuji Takeda, Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 9, 1979, Ser. No. 3,777

Claims priority, application Japan, Feb. 23, 1978, 53-20432; Apr. 26, 1978, 53-56362[U]

Int. Cl.[2] H01L *41/10*

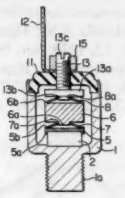
U.S. Cl. 310—321 **4 Claims**

1. A knocking detector for an internal combustion engine comprising:

a housing attached to a body of an engine for vibration together with said body;

piezoelectric means having one of the opposite faces thereof connected with said housing by way of a first spring and the other face connected by way of inertial mass means and a second spring with conductive means disposed to deliver an electric output to outside; and

insulating means attached to said housing to press said piezo-



electric means against said housing through said conductive means, said first and second springs and said inertial mass means under a predetermined load, said insulating means electrically insulating said conductive means from said housing;

wherein the resonant frequency of a vibration system comprising said inertial mass means and said first and second springs is selected so as to be substantially equal to a frequency of vibration caused by knocking of said engine.

4,225,803

APPARATUS FOR REMOVING MATERIAL COATINGS FROM INTERIOR SURFACES OF CONTAINERS

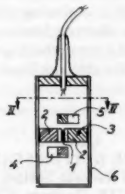
Sven K. L. Goof, Gammel Strandvej 236 B, Humlebaek, Denmark (DK-3050)

Continuation of Ser. No. 701,997, Jul. 1, 1976, abandoned. This application Apr. 27, 1978, Ser. No. 900,707

Claims priority, application Denmark, Jul. 4, 1975, 3029/75

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—323 **11 Claims**



1. An apparatus for removing deposits of material coatings from the inner surfaces of containers, such as lavatory bowls, heat exchanger containers, heat exchanger tubes, and the like, said cleaning apparatus comprising an elongate housing having a longitudinal axis with handle means on one end and being adapted to be immersed at least partially in a liquid within a container to be cleaned, a plurality of substantially bar-like, high frequency vibrator elements extending across the interior of said housing from one side to the other side of said housing, said bar-like vibrator elements being positioned at different axial positions along the longitudinal axis of said housing, and said bar-like vibrator elements at the respective axial positions being progressively angularly offset from the bar-like vibrator elements at other axial positions into different angular positions as viewed in the axial direction of said housing, and the opposite end portions of each of said bar-like vibrator elements being shaped to fit the outline of the inner surface of the elongate housing and being affixed thereto along the entire area of contact therebetween, whereby the power emission per unit of area from the outer surface of the housing is relatively uniform

in directions perpendicular to the axis of the housing, thereby enabling the deposits of material coatings on the inner surfaces of the container to be effectively removed without rotating the housing of the cleaning apparatus relatively to the wall of the container.

4,225,804

CATHODE RAY TUBE COMA CORRECTION DEVICE

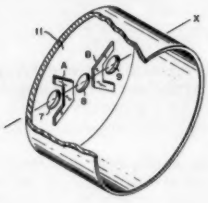
Johan Bekaert, and Raymond Goos, both of Tienen, Belgium, assignors to GTE Sylvania N.V., Tienen, Belgium

Filed Feb. 12, 1979, Ser. No. 11,284

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 2817738; Apr. 22, 1978, 7812297[U]

Int. Cl.[3] H01J *29/51, 29/76*

U.S. Cl. 313—412 **11 Claims**



1. In a self-converging cathode ray tube assembly having an inline cathode ray tube with a convergence electrode having a substantially flat base and a central aperture aligned in a plane with two outer apertures formed to provide passageway for electron beams, the improvement characterized by two substantially flat sheets of ferromagnetic material affixed in planar relationship to said flat base and disposed in mirror-image relationship intermediate said central aperture and each one of said two outer apertures, each of said sheets of ferromagnetic material having a substantially U-shaped configuration with the open portion thereof directed toward one of said outer apertures of said convergence electrode whereby said ferromagnetic sheets provide a weakening effect upon the vertical deflection field for the electron beams passing through said two outer apertures and a strengthening effect upon the vertical deflection field for the electron beam passing through said central aperture.

4,225,805

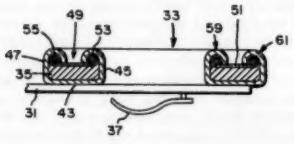
CATHODE RAY TUBE GETTER SEALING STRUCTURE

Harry E. Smithgall, and Kenneth Speigel, both of Seneca Falls, N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,637

Int. Cl.[3] H01J *29/84*

U.S. Cl. 313—481 **4 Claims**



1. In a CRT effusive material structure formed of a metallic material as a substantially annular U-shaped channeled container wherein an effusive material is disposed in the bottom portion thereof and wherefrom inner and outer sidewalls extend as spatially-related concentric formations having upper portions extending above said disposed effusive material, temporary cover means superjacently oriented atop said effusive material to form a protective seal thereover comprising:

an annular substantially U-shaped channeled metallic structure formed of a diverse material having a thickness less than that utilized in the construction of said container, and having constructural dimensions smaller than those of said container, said covering structure having a bottom portion wherefrom inner and outer spatially-related sidewalls extend in a consentric manner, said covering structure being superpositioned in a telescopic manner within said channeled container with the bottom portion of said covering structure being superjacently positioned upon said effusive material, the inner and outer sidewalls of said cover means being contiguous with the respective inner and outer sidewalls of said container forming an assembly having two concentric spatially-related laminated composite wall portions, each of said concentric spatially-related laminated wall portions having the contiguous laminated components thereof discretely joined in an interlocking manner by a substantially continuous annular deformation of the respective contiguous laminated components thereby providing two concentric spatially-related and substantially hermetic jointures for effecting positive securement of the protective covering means to said container, each of said annular deformations joining the laminate components of each respective composite wall portion being formed as an inward rolling of the composite wall to constitute a substantially continuous annular pseudo-cylindric formation, said rolled formation incorporating a progression of minute interlocking stressing-effects augmenting jointure at the interface of said laminates.

4,225,806

GENERATOR OF METER- OR DECIMETER-LONG WAVES

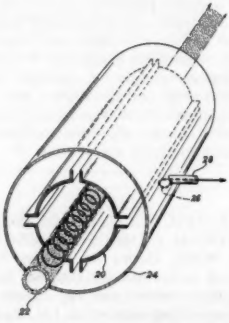
René Lé Gardeur, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 12, 1978, Ser. No. 914,818

Claims priority, application France, Jun. 27, 1977, 77 19619

Int. Cl.[3] H01J *25/02*

U.S. Cl. 315—5 **5 Claims**

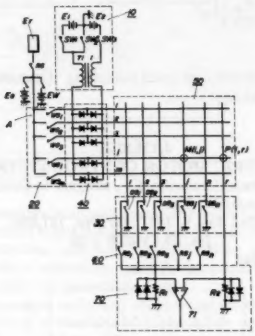


1. In a generator of meter or decimeter long electromagnetic waves based on an interaction of the cyclotronic type between a tubular electron beam given a cyclotronic movement by a static magnetic field, and an electromagnetic field having TE_{011} distribution, the improvement comprising a circular cylindrical resonant cavity comprising a plurality of circular cylindrical sectors separated by capacitive openings.

4,225,807
READOUT SCHEME OF A MATRIX TYPE THIN-FILM EL DISPLAY PANEL

Masahiro Ise; Kenzo Inazaki; Katsuyuki Machino, all of Tenri, and Chuji Suzuki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1978, Ser. No. 923,646
Claims priority, application Japan, Jul. 13, 1977, 52-84352; Jul. 13, 1977, 52-84353; Jul. 27, 1977, 52-90660; Aug. 31, 1977, 52-105179; Sep. 6, 1977, 52-107423; Sep. 26, 1977, 52-116205
Int. Cl.² H05B *33/08*
U.S. Cl. 315—169.3 **5 Claims**

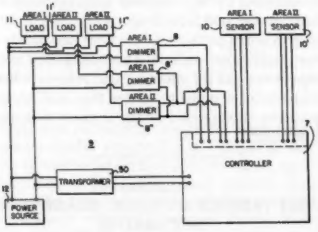


1. A display device having a plurality of picture elements comprising:
- a thin-film EL display panel comprising an EL layer sandwiched by a pair of dielectric layers said EL display panel manifesting a hysteresis curve in the applied voltage vs brightness characteristics, and a matrix electrode array sandwiching said pair of dielectric layers for matrix driving said EL display panel;
- reference electrode means disposed on said thin-film EL display panel; and
- means for deriving current having an amplitude equal to a difference between the current through said reference electrode and a readout current when reading out the memory state of said display panel.

4,225,808
SELECTIVE ILLUMINATION

Remo Saraceni, Philadelphia, Pa., assignor to Novitas, Inc., Santa Monica, Calif.

Filed Jun. 5, 1978, Ser. No. 912,442
Int. Cl.² H05B *37/02*; F21P *3/00*
U.S. Cl. 315—307 **3 Claims**

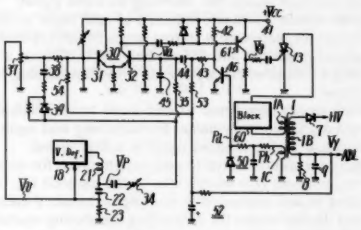


1. A method for illuminating items separated into at least one display group located in a display area comprising:
- lighting the display area using dim background lighting;
- sensing the approach of a person to said one display group;
- switching automatically the lighting from the dim background level initially provided to a level of greater intensity upon the sensing;
- sensing the departure of the person from the said one display group; and
- returning automatically the lighting to its original dim background level upon the sensing of the departure,
- whereby a display group may be highlighted with intense lighting when a person desirous of viewing the display is present and the display group may be maintained in a dimly lit manner when no person is present.

4,225,809
SIDE PINCUSHION CORRECTION CIRCUIT

Seiichi Ogawa, Tokyo; Yoshiaki Ohgawara, Inagi, and Kenichi Ohtsuka, Yokohama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1979, Ser. No. 27,713
Claims priority, application Japan, Apr. 7, 1978, 53/41420
Int. Cl.² H01J *29/70*
U.S. Cl. 315—371 **16 Claims**



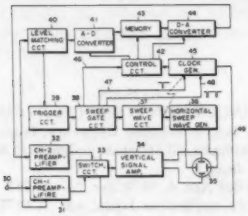
1. A side pincushion distortion correction circuit for a cathode ray tube deflection apparatus including a horizontal deflection generator for generating a horizontal scanning current and a horizontal pulse during a retrace interval thereof and a vertical deflection generator for generating a vertical scanning current during a vertical scan interval and a parabolic wave signal synchronized therewith, comprising,
- a horizontal deflection winding coupled to said horizontal deflection generator for accepting said horizontal scanning current;
- an impedance circuit connected in series with said horizontal deflection winding;
- controllable switch means including a controllable switch having a control electrode and a controlled current path connected in parallel with said impedance circuit;
- switching signal generating means for generating a switching signal responsive to said horizontal pulse;
- means for modulating the phase of said switching signal by said parabolic wave signal at the vertical rate;
- means for supplying said switching signal to said control electrode of said controllable switch for operating said controllable switch during the latter half of said horizontal retrace interval;
- means for progressively advancing said phase of said switching signal during a first portion of the vertical scan interval and for progressively retarding said phase during a second portion of the vertical scan interval for altering said scanning current in a manner to reduce pincushion distortion;
- means for generating a brightness signal corresponding to the brightness of a reproduced picture; and
- means for further modulating said phase of said switching signal in dependence on said brightness signal.

4,225,810

WAVEFORM COMPARISON AND DISPLAY SYSTEM USING CATHODE RAY TUBE

Takanori Ushiro, Koganei, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,933
Claims priority, application Japan, Aug. 31, 1977, 52-103538
Int. Cl.[2] H01J *31/10*
U.S. Cl. 315—392 **5 Claims**



1. A waveform comparison and display system using a cathode ray tube comprising,

input terminal means for receiving an input signal;

digital memory means connected to said input to terminal means for sequentially storing levels of said input signal in digital quantities and for reading out the stored contents under control of clock pulses to provide an analog readout signal;

switch means connected to said input terminal means and said digital memory means for switching said input signal and said analog readout signal at a high speed;

display means connected to said switch means for displaying the switched two waveforms on the cathode ray tube;

control means connected to said digital memory means and said display means for controlling the storing operation of said digital memory means and the sweep operation of said display means by a trigger signal synchronized with said input signal and for start-stop controlling the generation of said clock pulses in synchronism with the sweep operation of said display means, so that the switched two waveforms are displayed on the screen of said cathode ray tube in such a manner that the two waveforms are stationary with respect to each other.

4,225,811

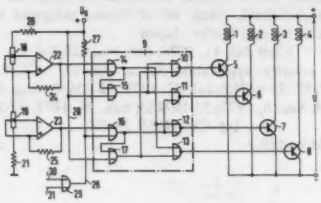
DIRECT CURRENT MOTOR WITH POLYPHASE STATOR WINDING AND ELECTRONIC COMMUTATING DEVICE CONTROLLED BY AN ANGULAR POSITION TRANSMITTER

Hans Kühnlein, Nürnberg-Grossgründlach; Karl Schalk, Nuremberg, and Georg Kögler, Schwabach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,453
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743661
Int. Cl.[2] H02K *29/02*
U.S. Cl. 318—261 **1 Claim**

1. In a direct current motor with polyphase stator windings and an electronic commutating device controlled by angular position transmitters, in which the signals generated by the angular position transmitters control the commutation of the current flowing through the stator winding through a selection circuit containing switching elements responsive to a command input for torque direction to reverse the polarity of the signals generated by the angular position transmitters, the improvement comprising:

an Exclusive OR gate providing its output as the command input for torque direction, said gate having one input adapted to receive an input signal at one of two logic levels, one level indicating "Counterclockwise Rotation" and the other logic level "Clockwise Rotation" and its other input adapted to receive an input signal at one of



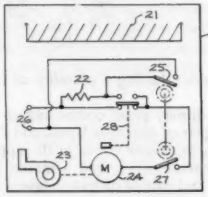
two logic levels, one level indicating "Operation" and the other "Braking".

4,225,812

ELECTRIC MOTOR CONTROL SYSTEM

Frederick L. Kraus, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Jan. 5, 1977, Ser. No. 757,050
Int. Cl.[3] H02B *7/00*
U.S. Cl. 318—349 **1 Claim**



1. In an electric washing apparatus of the static wash cycle type including a plurality of line terminnals, a motor of predetermined voltage rating subject to being connected to a source of electric current supply normally having a voltage which exceeds the voltage rating of said motor by a limited amount, a resistor having sufficient current carrying capability and having a sufficiently low resistance value to pass sufficient current to operate said motor when connected in series therewith, said resistor being alternatively connectable either directly across said supply source to act as a heating resistor for the washing apparatus or in series with said motor to act as a voltage-reducing resistor, a cycle timer for disconnecting said motor from said line terminals and connecting said resistor directly across said line terminals during a first operating cycle and for connecting said motor across said line terminals during a second operating cycle, a thermal relay responsive to motor temperature during said second operating cycle for connecting said resistor in series circuit relation with said motor whenever said motor temperature exceeds a predetermined normal operating temperature and for shunting said resistor whenever said motor temperature is equal to or less than said normal operating temperature leaving said motor connected directly across said line terminals.

4,225,813

TRANSIT VEHICLE DYNAMIC BRAKE CONTROL APPARATUS

Arun P. Sahasrabudhe, West Mifflin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

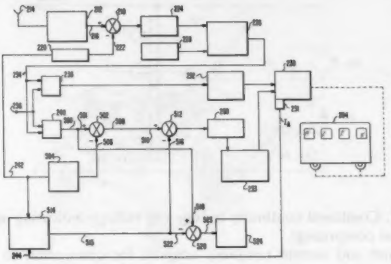
Filed Nov. 28, 1978, Ser. No. 964,313
Int. Cl.[2] H02P *3/16, 3/26*
U.S. Cl. 318—371 **12 Claims**

1. In brake control apparatus for a vehicle having a motor

and mechanical friction brakes, said apparatus being responsive to a total tractive effort signal, a vehicle speed signal and a motor armature current signal, the combination of

means establishing a determined dynamic brake effort signal in response to the vehicle speed signal and the motor armature current signal,

means establishing a brake effort reduction signal in response to the vehicle speed signal,



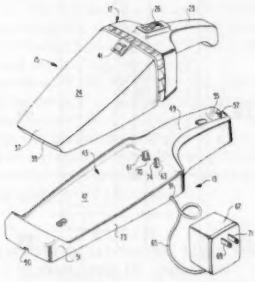
means operative with said motor and establishing a dynamic brake effort control signal in accordance with the difference between said total tractive effort signal and said brake effort reduction signal for controlling the dynamic brake effort of the vehicle, and

means operative with said mechanical friction brakes and establishing a mechanical brake effort control signal in accordance with the difference between said total tractive effort signal and said determined dynamic brake effort signal for controlling the mechanical friction brakes.

4,225,814
CORDLESS VACUUM CLEANER STORING AND RECHARGING SYSTEM

Carroll M. Gantz; Timothy G. Pugh, both of Baltimore, and Alvydas P. Karasa, Joppa, all of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed Aug. 11, 1978, Ser. No. 932,761
Int. Cl.³ H01M *10/46*
U.S. Cl. 320—2 **6 Claims**



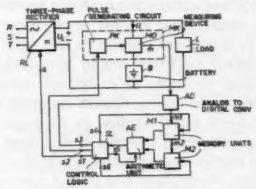
1. A storing and recharging device for hand-held cordless electric vacuum cleaner comprising an elongated base adapted to rest on or against a flat surface and having an upper surface contoured to receive and support said vacuum cleaner, said base having means cooperatively engageable with said vacuum cleaner to releasably retain said vacuum cleaner thereon, said base having plug means extending outwardly of its upper surface, said plug means including a pair of generally parallel, spaced plug terminals, insulating means extending outwardly of said base upper surface and between said terminals, said insulating means extending outwardly beyond said terminals, an electric line cord connected at one end to said plug means and extending outwardly of the bottom of said base and adapted to connect to a standard A.C. outlet.

3. A storing and recharging device for a hand-held cordless electric vacuum cleaner comprising an elongated base adapted to rest on or against a flat surface and having an upper surface contoured to receive and support said vacuum cleaner, said base having an upstanding member forming a pocket adapted to receive a portion of said vacuum cleaner, and resilient means adapted to engage another portion of said vacuum cleaner to releasably retain said vacuum cleaner thereon, said base having plug means extending outwardly of its upper surface, an electric line cord connected at one end to said plug means and extending outwardly of the bottom of said base, a plug at the other end of said cord adapted to connect said cord to a standard A.C. outlet, said base having wireway means formed in its bottom in which selected lengths of said line cord can be positioned, said wireway means including a plurality of spaced ribs forming recesses in the bottom of said base, said line cord adapted to fit in said recesses, whereby the length of the line cord extending from said base may be varied.

4,225,815
METHOD AND APPARATUS FOR THE CHARGING AND SUPERVISION OF A BATTERY

Hans S. H. Lind, and Sune A. W. Örevik, both of Huddinge, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 1, 1978, Ser. No. 874,121
Claims priority, application Sweden, Feb. 17, 1977, 7701792
Int. Cl.² H02J *7/04*
U.S. Cl. 320—39 **5 Claims**



1. A method for charging and supervising a battery, the battery receiving a charging current from a controllable voltage source having an outlet voltage dependent on the value of a control quantity which assumes a first value for giving the initial charging and a second value for giving the maintenance charging of the battery, said method comprising the steps of measuring the charging current at a number of consecutive measuring instants, storing a first measuring value associated with a first measuring instant as a reference value, a second measuring value associated with a second measuring instant, generating the difference between said reference value and the second measuring value for obtaining a difference value, comparing said difference value with a constant positive value, replacing said first measuring value as the reference value by said second measuring only if the absolute value of said difference value is greater than said constant value, and making said second value a new reference value, and accumulating a given number of the measuring instants for which said absolute value

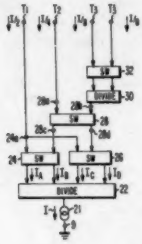
is less than said constant value is valid for controlling the voltage source in order to change its outlet voltage from said first to said second value.

4,225,816

PRECISION CURRENT SOURCE

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 41,096
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—4 **7 Claims**



1. A precision current source comprising:

a plurality of n+1 output terminals consecutively ordinally numbered from 1 to n+1, where n is a positive integer greater than 1;

2^n input terminals, suitable for receiving 2^n sources of nominally equal currents;

a plurality, 2^n-1 in number, commutating circuits each having respective first and second input electrodes, first and second output electrodes, a respective control terminal, each of said commutating circuits responsive to a first phase of clock signal applied to its respective control terminal to selectively connect its first input electrode to its first output electrode and to selectively connect its second input electrode to its second output electrode, each of said commutating circuits responsive to a second phase of clock signal applied to its respective control terminal to selectively connect its first input electrode to its second output electrode and to selectively connect its second input electrode to first output electrode;

said 2^n-1 commutating circuits being arranged in a plurality of n consecutively ordinally numbered ranks, each rank containing 2^{n-m} commutating circuits where m is the ordinal number of the rank consecutively ranging from m=1 to m=n, the input electrodes of the commutating circuits of the first rank being connected to respective ones of said 2^n sources of nominally equal currents;

the first output electrodes of each rank being connected to the output terminal of the same ordinal numbering as that rank, the second output electrodes of each rank, except for the nth rank, being connected to the separate respective ones of the first and second input electrodes of the rank with the next higher ordinal number, the second output electrode of the commutating circuit of nth rank being connected to the n+1 output terminal;

means for providing n differing clock signals consecutively ordinally numbered from 1 to n, each of said clock signals providing said first phase of clock signal and said second phase of clock signal during equal and alternating time intervals; and

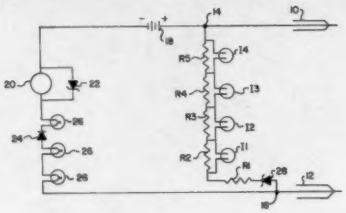
means for applying each of said n differing clock signals to the control terminals of the commutating circuits in the rank of the same ordinal numbering as its respective clock signal.

4,225,817

COMBINED CONTINUITY AND VOLTAGE TEST INSTRUMENT

Gerald D. Kahlden, Lawton, Okla.

Filed Oct. 10, 1978, Ser. No. 949,973
Int. Cl.³ G01R *19/14*
U.S. Cl. 324—133 **6 Claims**



1. Combined continuity testing and voltage indicating apparatus comprising:

first and second terminals adapted for connection to test probes,

a first circuit leg coupled between said first and second terminals, said first leg including a sounding device connected in series with a current limiting resistance, and

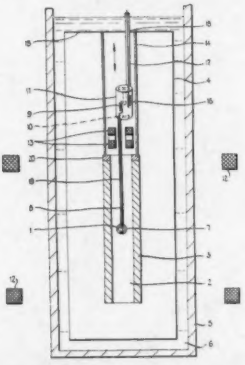
a second circuit leg coupled between said first and second terminals, said second leg including a series connected resistor divider network, and a plurality of indicator lamps connected across resistors in said divider network.

4,225,818

CRYOGENIC NUCLEAR GYROSCOPE

John C. Gallop, Twickenham, and Susan P. Potts, Letchworth, both of England, assignors to National Research Development Corporation, London, England

Filed Nov. 7, 1978, Ser. No. 958,494
Claims priority, application United Kingdom, Nov. 10, 1977, 46866/77
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—302 **35 Claims**



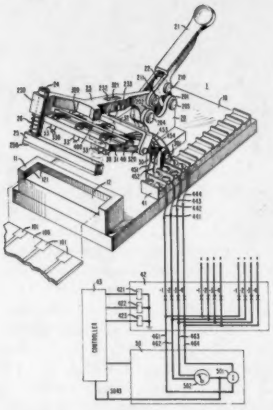
1. A cryogenic nuclear gyroscope comprising superconducting means to provide a substantially homogeneous magnetic field, a magnetic field sensitive substance having nuclei possessing a net magnetic moment, means to polarise the said substance to provide said net nuclear magnetic moment, detector means sensitive to the changes in magnetic flux caused by precession of the nuclear moments of said substance when in said homogeneous magnetic field and frequency sensitive means to detect changes in said precession caused by rotation of the gyroscope about an axis parallel to the direction of said homogeneous magnetic field.

4,225,819

CIRCUIT BOARD CONTACT CONTAMINATION PROBE

Thomas G. Grau, Mendham Township, Morris County, and David E. Tompsett, Chatham Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1978, Ser. No. 950,725
Int. Cl.[3] G01R *31/02*
U.S. Cl. 324—415 **17 Claims**



1. Apparatus for testing circuit boards (**100**), said apparatus having

circuitry (**50**) for measuring electrical resistance, and

testing apparatus (**1**) for coupling said measuring circuitry to conducting fingers (**101**) of a circuit board

CHARACTERIZED IN THAT

said testing apparatus comprises

a probe assembly (**33**) having electrodes (**330**) corresponding to each of the circuit board conducting fingers, said electrodes each comprising a needle member and a contact member,

guide apparatus (**11**) for receiving and holding the circuit board,

positioning apparatus (**20, 21, 23, 24, 25, 26, 30, 31, 32**) for securing the circuit board to said guide apparatus and for positioning said probe assembly to simultaneously engage said contact members of a pair of said electrodes with each circuit board conducting finger, and

coupling apparatus (**40, 42, 43, 44-, 45-, 46-, 400, 401, 402**) for sequentially connecting said needle members and said contact members of each of said pair of engaged electrodes with said measuring circuitry to measure the resistance of a contamination film and foreign material appearing on a conducting finger between said contact members of said engaged pair of electrodes.

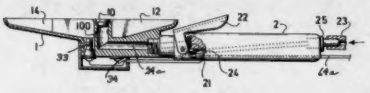
4,225,820

APPARATUS FOR DIAGNOSING MILK SECRETION DISORDERS IN ANIMALS

Duson Rysanek; Bohumir Kotrc, both of Brno; Jaroslav Hamalcik, Pelhrimov, and Peter Olejnik, Brno, all of Czechoslovakia, assignors to Vyzkumny ustav veterinarniho lekarstvi, Brno, Czechoslovakia

Filed Feb. 1, 1979, Ser. No. 8,570
Claims priority, application Czechoslovakia, Feb. 3, 1978, 673-78
Int. Cl.[2] G01N *27/07*
U.S. Cl. 324—450 **5 Claims**

1. In an apparatus for diagnosing disorders in the milk secretion of animals, said apparatus being based upon an electric detection of deviations of milk specimens from standard acceptable milk, the improvement comprising a holder carrying a diagnostic dish divided by partition walls into diagnostic units, the diagnostic units being provided with respective measuring probes, scavenging nozzles in the units directed toward the respective probes, and signal lights interconnected



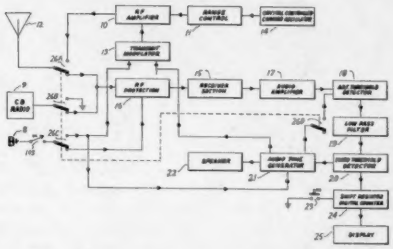
in a first circuit incorporating said probes for evaluating the quality of milk in the respective diagnostic units, the output of said circuit being connected to the input of a display indicating the quality of the milk specimen in each diagnostic unit.

4,225,821

ELECTRONIC SIGNALLING DEVICE TO ALERT CB RADIO EQUIPPED VEHICLES

Donald V. Carleson, 346 Sylvan Ave., San Mateo, Calif. 94403

Filed Nov. 28, 1977, Ser. No. 855,166
Int. Cl.[2] H01B *1/38*
U.S. Cl. 455—73 **4 Claims**



1. A signalling transceiver for use by an operator of a CB transceiver equipped vehicle to alert the operator of a similarly equipped vehicle, said signalling transceiver being normally in a receive mode and having a momentary transmit mode, comprising in combination;

means for connecting the signalling transceiver to the existing CB antenna and also to the existing CB transceiver;

said means for connecting comprising a switch means having a plurality of sets of contacts, each set of contacts being in a steady state position when the signalling transceiver is in said receive mode and a momentary position when the signalling transceiver is in said momentary transmit mode;

said signalling transceiver comprising means for receiving and detecting an alerting signal including;

an RF protection circuit to prevent reception by the signalling transceiver during transmission and reception by the CB transceiver, and also to prevent reception of all strong RF signals from any source;

a receiver means for receiving and amplifying an alerting signal;

and circuit means for validating the received alerting signal;

the valid reception of an alerting signal being displayed by an illumination device and having an accompanying audio tone;

said signalling transceiver further comprising means for transmitting an alerting signal including;

means to produce a carrier signal;

means to produce an audio tone;

means to modulate the carrier signal with the audio tone;

means to amplify and transmit the modulated carrier signal upon activation of the switch means to the momentary position;

range control means to control the distance of transmission of the alerting signal;

and means for supplying the audio tone to the circuit means for validating upon activation of the switch means to provide a visual display and accompanying audio tone for the operator of the signalling transceiver to know that an alerting signal has been transmitted.

4,225,822

AMPLITUDE MODULATION CIRCUIT FOR A TRANSMITTER

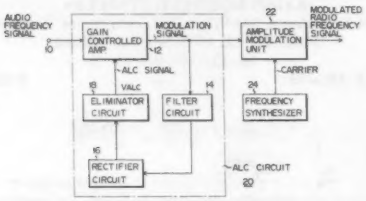
Keiichiro Kariatsumari, Inagi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 14, 1978, Ser. No. 886,661

Claims priority, application Japan, Mar. 24, 1977, 52-31582

Int. Cl.[2] **H04B** *1/04;* **H03C** *1/06*

U.S. Cl. 455—108 **7 Claims**



1. An amplitude modulation circuit for a transmitter, comprising:

(a) gain controlled amplifier means for amplifying an input audio-frequency signal to produce a modulation signal, the amplification gain of said gain controlled amplifier means being negative-feedback-controlled by an automatic level control signal;

(b) filter means for producing a filtered modulation signal from said modulation signal, the relative gain of said filter means in response to a signal of approximately 2.5 kHz being approximately 3 dB greater than the relative gain of said filter means in response to a signal of approximately 400 Hz;

(c) rectifier means for rectifying the output signal of said filter circuit in order to provide a DC component proportional to the amplitude of said filtered modulation signal;

(d) eliminator means for eliminating ripples from the output signal of said rectifier means in order to provide said automatic level control signal converted into a direct current;

(e) modulation means for amplitude-modulating an input carrier in order to produce a modulated radio-frequency signal for transmission, the modulation degree of said modulation means being controlled by said modulation signal; and

(f) frequency synthesizer means for synthesizing a radio-frequency signal equivalent to the transmission frequency in order to provide said carrier; whereby uniform modulation throughout the frequency band of said modulation signal is achieved when the modulation signal level is relatively low; overmodulation is avoided while a sufficiently high mean amplitude modulated signal is maintained when the modulation signal amplitude is raised and the main frequency components of said modulation signal are distributed in an intermediate frequency range below 2.5 kHz; and the upper limit of the amplitude of said modulation signal is restricted to a moderately lower level when the main frequency components of said modulation signal are distributed in a higher frequency range over 2.5 kHz so that the level of produced spurious signals is reduced.

4,225,823

FRONT END CIRCUITS OF FM RECEIVERS

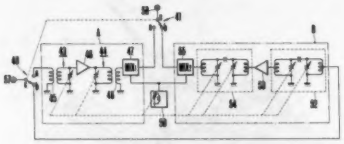
Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 27, 1978, Ser. No. 881,277

Claims priority, application Japan, Feb. 26, 1977, 52-22658[U]; Jun. 3, 1977, 52-72388[U]

Int. Cl.[2] **H03H** *7/12;* **H04B** *1/18*

U.S. Cl. 455—226 **10 Claims**



1. In a front end circuit of an FM receiver of the type wherein the frequency of a high frequency signal received from an antenna input circuit is converted to obtain an intermediate frequency signal, the improvement which comprises at least two alternate signal processing circuits having different characteristics in sensitivity and selectivity to be selected in compliance with a high frequency signal tuned by the antenna input circuit, a first one of said alternate signal processing circuits comprising means for providing relatively broader frequency band and relatively high signal to noise ratio processing for said high frequency signal, the other one of said alternate signal processing circuits comprising means for providing relatively narrower frequency band and relatively lower signal to noise ratio processing for said high frequency signal, said other one of said alternate signal processing circuits including filter means providing a relatively steeper and narrower band pass characteristic than that provided by said first one of said alternate signal processing circuits, both of said alternate signal processing circuits having band pass characteristics centered substantially about the same frequency, a frequency converter for converting the outputs of said processing circuits into an intermediate frequency signal, and transfer switch means for selectively connecting said first one of said alternate processing circuits to the input of said frequency converter when said received high frequency signal is of a relatively high intensity and for connecting said other one of said alternate signal processing circuits to the input of said frequency converter when said received high frequency signal is of a relatively low intensity, whereby the received high frequency signal is reproduced in the most suitable sensitivity and selectivity.

4,225,824

FREQUENCY ADJUSTING CIRCUIT

Mitsuo Sekine, Tokorozawa, and Sizuo Yamaguchi, Yama, Japan, assignors to Citizen Watch Co. Ltd., Tokyo, Japan

Filed Jun. 15, 1978, Ser. No. 915,739

Claims priority, application Japan, Jun. 21, 1977, 52-73695

Int. Cl.[3] **H03K** *1/17, 21/30*

U.S. Cl. 328—63 **10 Claims**

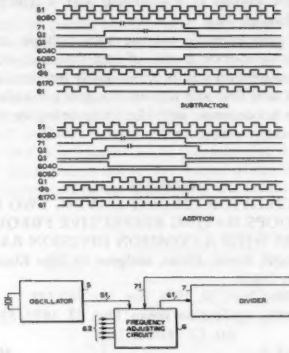
1. A circuit digitally adjusting the frequency of a time reference signal comprising:

means for generating an unadjusted time reference signal;

means for adjusting the mean frequency of the time reference signal by adding a desired number of pulses to, or by subtracting a desired number of pulses from, said time reference signal;

a frequency divider for generating an adjusted output frequency and a frequency adjusting instruction signal which initiates adjustment of the mean unadjusted frequency of the time reference signal by dividing the frequency of the output of the frequency adjusting means;

a setting means for determining the time of effecting the frequency adjusting operation of the frequency adjusting



means upon receipt of the frequency adjusting instruction signal.

4,225,825

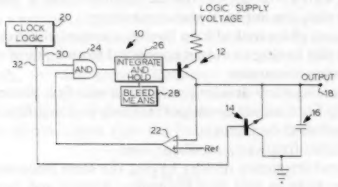
PRECISION SELF-ADJUSTING SLOPE CIRCUIT

Geoffrey P. Watts, Mesa, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 758,116, Jan. 10, 1977, abandoned. This application Sep. 25, 1978, Ser. No. 945,159

Int. Cl.[2] H03K *5/00, 4/10*

U.S. Cl. 328—185 **6 Claims**



1. An improved drift correcting ramp voltage generator circuit comprising:

(a) circuit means for generating a ramp voltage output having an input for resetting the ramp voltage to a starting value and an input for determining the slope of the ramp voltage;

(b) a comparator having a pair of inputs and an output, one of said pair of inputs being connected to said ramp voltage output, the other of said pair of inputs being connected to a reference voltage source;

(c) an integrate and hold circuit having an input and an output, said output being connected to said ramp slope determining input;

(d) bleed means connected to said integrate and hold circuit for continuously bleeding off the value being held at a predetermined rate to cause the output from said integrate and hold circuit coupled to said ramp slope determining input to drift in one direction;

(e) a clock logic circuit having a pair of outputs, means for producing a plurality of pulses and counting means responsive to said pulses for generating an output signal on one of said outputs when the ramp is to be reset and an output signal coincident with a preselected one of said pulses on the other of said outputs when drift compensation is to be applied, said reset signal output being connected to said resetting input of said ramp generating circuit; and,

(f) a gate circuit having a pair of inputs and an output, one of said inputs being connected to said drift compensation signal output of said clock logic circuit, the other of said inputs being connected to said output of said comparator, said gate circuit output being connected to said input of said integrate and hold circuit, said gate circuit applying a fixed compensation value to the value held by said integrate and hold circuit while said pair of gate circuit inputs receive signals in coincidence to cause the output from said integrate and hold circuit coupled to said ramp slope determining input to change in a direction opposite to said one direction.

4,225,826

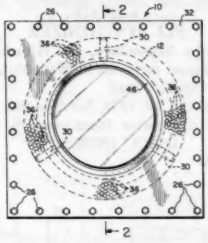
LASER APPARATUS

Owen Lewis, Fairport; Stanley Refermat, and Thomas A. Almquist, both of Rochester, all of N.Y., assignors to The University of Rochester, Rochester, N.Y.

Filed Feb. 3, 1978, Ser. No. 875,111

Int. Cl.[2] H01S *3/092*

U.S. Cl. 330—4.3 **7 Claims**



1. Laser apparatus comprising

a slab of active laser material adapted to be illuminated by pumping radiation at pumping wavelengths in a band of wavelengths and from which laser light is emitted in response to said pumping radiation at a wavelength different from said pumping wavelengths,

said slab having a first surface through which said laser light passes and at which said pumping radiation is received after passage through said slab,

said slab having a second surface opposite to said first surface through which said pumping radiation passes and at which said laser light is received after passage through said slab,

a coating on said second surface which is substantially totally transmissive of said pumping radiation in said band of pumping wavelengths and is substantially totally reflective of radiation of said laser light wavelength,

an anti-reflection coating on said first surface substantially totally transmissive of radiation at said laser light wavelength and substantially totally reflective of radiation only at certain of said pumping wavelengths at which said pumping radiation is not substantially absorbed during a single passage through said slab.

4,225,827

STABILIZATION CIRCUIT FOR TRANSISTOR RF POWER AMPLIFIERS

John F. Davis, Jr., Rochester, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 21, 1979, Ser. No. 13,534

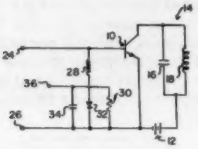
Int. Cl.[3] H03F *1/26, 3/20*

U.S. Cl. 330—296 **11 Claims**

1. A Class C amplifier of the type used in radio communications having a stabilization circuit for preventing spurious

oscillations in the output signal of the amplifier and for reducing the chances of transistor failure due to changing load conditions, comprising:

an amplifying transistor biased to operate in the Class C mode of operation;



a circuit element connected between the base and emitter junctions of said amplifying transistor for inhibiting spurious oscillations in the transistor; and

means responsive to the voltage across said circuit element for limiting the base voltage of said amplifying transistor to prevent transistor failure.

4,225,828

PLL SYNTHESIZER

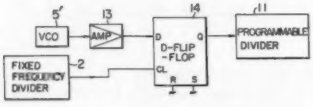
Masahiro Watanabe, Sagamihara, and Hiroshi Haruki, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1978, Ser. No. 895,073

Claims priority, application Japan, Apr. 20, 1977, 52-46263

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—1 A **3 Claims**



1. A phase lock loop frequency synthesizer for supplying oscillator signals to a multi-channel transceiver having transmission and reception modes comprising:

means for providing a reference frequency $f_{ref}=(2n+1)\times f_r$, where f_r equals the frequency difference between adjacent channels of said transceiver and n is a positive integer;

a first frequency divider for dividing said reference frequency by $(2n+1)$ to produce a frequency f_r;

a second frequency divider for dividing said reference frequency to produce a clock signal;

a phase comparator having a first input connected to receive the output of said first frequency divider;

a loop filter connected to receive the output of said phase comparator;

a voltage controlled oscillator connected to receive the output of said loop filter and for generating frequencies in a first frequency range when said tranceiver is in the receiving mode and in a second frequency range when said transceiver is in the transmitting mode;

a D-flip-flop connected to receive at one of its input terminals the output of said voltage controlled oscillator and at a clock input terminal the output of said second frequency divider;

a programmable frequency divider connected to receive the output of said flip-flop and capable of producing frequency dividing factors in a first frequency dividing factor range when said frequency synthesizer supplies oscillator signals to said transceiver in a receiver mode and in a second frequency dividing factor range when said frequency synthesizer supplies oscillator signals to said transceiver in a transmitting mode, said programmable divider having an output connected to another input of said phase comparator;

means for selecting a frequency divider factor for said programmable divider in accordance with a selected transceiver channel; and,

means for concurrently causing said voltage controlled oscillator to operate in one of said first and second frequency ranges and said programmable divider to operate in one of said first and second frequency dividing factor ranges in accordance with the transmitting or receiving mode of said transceiver.

4,225,829

LOCAL OSCILLATOR CIRCUIT HAVING TWO PHASE LOCKED LOOPS HAVING RESPECTIVE FREQUENCY DIVIDERS WITH A COMMON DIVISION RATIO

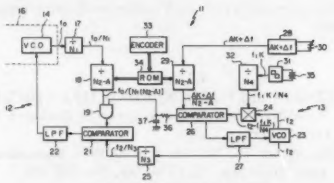
Tadashi Kumagai, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,348

Claims priority, application Japan, Dec. 22, 1977, 52/154736

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—1 A **10 Claims**



1. An oscillator circuit including a first phase locked loop having a first voltage controlled oscillator and a first phase comparator, the improvement comprising:

a second phase locked loop having a second phase comparator and having an output connected to an input of said first phase comparator;

a first frequency divider provided in said first phase locked loop for dividing an output frequency of said first voltage controlled oscillator;

a variable frequency oscillator; and

a second frequency divider having the same frequency division ratio as said first frequency divider and connected between an output of the variable frequency oscillator and an input of said second phase comparator.

4,225,830

PLURAL PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

Joël Remy, Paris, France, assignor to Adret Electronique, France

Filed Dec. 8, 1978, Ser. No. 967,752

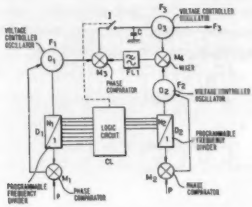
Claims priority, application France, Dec. 23, 1977, 77 38954

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—2 **3 Claims**

1. A frequency synthesizer comprising: a first phase locked loop including: a first voltage controlled oscillator having an output and a control input, a first programmable frequency divider having an input connected at the output of the first oscillator, said first programmable frequency divider further having an output, and a first phase comparator having a first input connected to the output of the said first programmable frequency divider, a second input on which a first reference frequency is applied and an output connected to the control input of said first oscillator, said first loop generating small frequency steps; a second phase locked loop including : a second voltage controlled oscillator having an output and a control input, a second programmable frequency divider having an input connected to the output of the second oscillator,

said second programmable frequency divider further having an output, and a second phase comparator having a first input connected to the output of the said second programmable frequency divider, a second input on which a second reference frequency larger than the said first reference frequency is applied and an output connected to the control input of said second oscillator, said second loop generating greater frequency steps, and a third phase locked loop including: a third voltage controlled oscillator having an output and a control input, a mixer having a first input connected to the output of the third oscillator, a second input connected to the output of the second oscillator and an output, a third phase comparator having a first input connected to the output of the said mixer, a second input connected to the output of the first oscillator and an output, and means connecting the output of the third



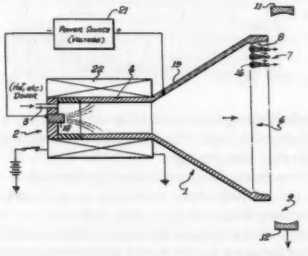
phase comparator to the control input of the third oscillator, whereby the third oscillator generates the algebraic sum of the first and second frequencies respectively generated by the first and second oscillators, characterized by circuit means for programming the division ratio of the first frequency divider so that, over a continuous range of increasing values of the frequency to be synthesized at the output of the third oscillator, the said first frequency increases and decreases alternately by a fixed number of small steps, in such a way as to pass through a maximum and a minimum, said circuit means further programming the division ratio of the second frequency divider so that at each of the successive maxima of the first frequency, the said second frequency assumes values lower than the frequency to be synthesized, and that at each of the successive minima of the first frequency, the second frequency assumes values higher than the frequency to be synthesized.

4,225,831

CW SCALABLE DONOR-ACCEPTOR GAS TRANSFER LASER

Earl R. Ault, Richland, Wash., and Mani L. Bhaumik, Malibu, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 10, 1978, Ser. No. 932,592
Int. Cl.[3] H01S *3/09, 3/14*
U.S. Cl. 331—94.5 PE **10 Claims**



1. A method of promoting an electronic energy charge transfer between a noble gas donor selected from a group consisting of helium and argon and a nitrogen lasing gas acceptor comprising:

admitting a continuous-flowing supply of said noble gas into a constricted receiving end of a chamber having widely-diverging walls terminating in an expanded mixing region end,

subjecting said noble gas supply in said constricted end to a continuously-applied electric-discharge having an electric potential of sufficient magnitude to convertably excite the noble gas into an energy-transferable state,

expandably delivering said excited gas to said mixing region end,

diffusion-mixing said delivered gas with a continuous supply of said nitrogen lasing gas for transferably exciting said nitrogen gas into a laseable state, and

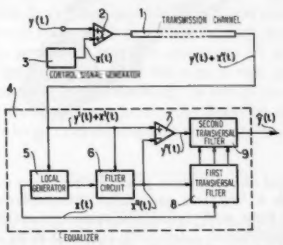
delivering said excited nitrogen gas into an optical resonant cavity for generating a laser beam.

4,225,832

SELF-ADAPTING EQUALIZER

Jean-Claude Faye, Villebon, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Oct. 30, 1978, Ser. No. 955,838
Claims priority, application France, Nov. 30, 1977, 77 36094
Int. Cl.[2] H04B *3/10*
U.S. Cl. 333—16 **6 Claims**



1. A self-adapting equaliser for connection to the reception end of a transmission channel, said transmission channel receiving at the transmission end a useful signal y(t) and a control signal x(t) of period T superposed on the useful signal and of a form which is known at the reception end, the transmission channel supplying at the reception end a distorted signal with a component y'(t) corresponding to the useful signal y(t) and a component x'(t) corresponding to the control signal x(t), said equaliser being characterized in that it comprises:

a local generator supplying a control signal identical to the control signal x(t) applied to the transmission channel at the transmission end and received in the distorted form x'(t) mixed with the distorted form y'(t) of the useful signal, said control signal being synchronised with said signal x'(t);

a filter circuit receiving the signal $y'(t)+x'(t)$ from the reception end of the transmission channel and providing at its output the mean value of this input signal and an integer number, $(n-1)$ previous input signals sampled at intervals spaced by the period T of the control signal x(t);

a first non-recursive transversal filter comprising a cascade-connected impedance array with intermediate taps, with its input connected to receive the signal x''(t) provided by the filter circuit and having its weighting coefficients controlled so as to minimise the correlation functions of the signals at the intermediate taps and the signal which is the difference between its output signal x(t) and the control signal x(t) supplied by the local generator;

a subtractor circuit receiving on an additive first input signal $y'(t)+x'(t)$ obtained at the reception end of the transmis-

sion channel and on a subtractive second input the signal $x''(t)$ supplied by the filter circuit, and providing at its output a signal equal to the difference between the two signals applied to its inputs; and

a second transversal filter with the same cascade-connected impedance array and the same weighting coefficients as the first transversal filter, receiving on its input the output signal of the subtractor circuit and providing at its output the equalised useful signal y(t).

4,225,833

HELICAL CIRCULAR WAVE GUIDE HAVING LOW LOSS AROUND CURVES AND OVER A WIDE FREQUENCY BAND

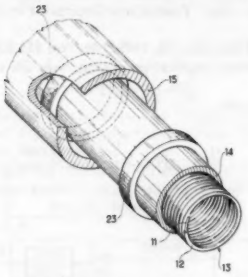
Georges Comte, Lyons, France, assignor to Les Cables de Lyon, Lyon, France

Filed Jun. 6, 1978, Ser. No. 913,166

Claims priority, application France, Jun. 24, 1977, 77 19403

Int. Cl.[2] H01P *3/13*

U.S. Cl. 333—242 **3 Claims**



1. A helical circular wave guide formed by a copper wire coated with a low loss polyolefin thermoplastic material wound in a helix with contiguous turns and welded turn to turn, the improvement comprising: said helix being covered by a continuous aluminum screen tube drawn-down on the helix, said aluminum screen tube being of a slightly larger diameter than the outer diameter of the helix, the assembly formed by the helix and the screen tube being placed inside a protective steel tube, said protective steel tube being of a larger diameter than that of said continuous aluminum screen tube, and defining a space between the steel tube and the aluminum tube, longitudinally spaced bushings between said steel tube and said aluminum screen tube for holding said aluminum screen tube centered in relation to said steel tube and and spaced therefrom to maintain the space between the steel tube and the aluminum tube empty absent the spaced bushings, and said aluminum screen tube being integral with the protective steel tube at respective ends of said tube by end bushings glued between said aluminum screen tube and said protective steel tube.

4,225,834

EQUALIZING NETWORK HAVING A PLURALITY OF FREQUENCY SENSITIVE ATTENUATION BRANCHES IN A NEGATIVE FEEDBACK ARRANGEMENT

Willem van Doorn, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

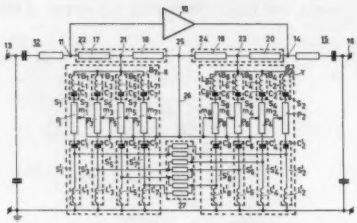
Filed Jun. 4, 1979, Ser. No. 45,491

Claims priority, application Netherlands, Jun. 22, 1978, 7806727

Int. Cl.[2] H04B *3/14;* **H03H** *7/14*

U.S. Cl. 333—28 R **2 Claims**

1. An equalizing network for attenuation/frequency characteristic equalization comprising, a plurality of adjustable attenuation branches adapted to operate in mutually different frequency, sub-bands, each of the attenuation branches being formed by the series arrangement of, in the following order, a first series resonant circuit, a potentiometer having a movable contact, and a second series resonant circuit, the first and second series resonant circuit each being tuned to the same intermediate frequency located in the relevant frequency sub-band, the attenuation branches being arranged in a first and a second group such that attenuation branches pertaining to adjacent frequency sub-bands are in different groups with the attenuation branches in the same group arranged in parallel and connected to ground at one end, and the equalizing network further comprises an amplifier having an input connected through a matching impedance to an input terminal of the network and an output connected through a matching



impedance to an output of the network and also to the amplifier input through a negative feedback circuit, said negative feedback circuit comprising the series arrangement of a first and a second pair of series-arranged resistors, means connecting the common junction of the resistors forming the first pair and the common junction of the resistors forming the second pair to the ends, remote from ground, of the first group and the second group of parallel-arranged attenuation branches, respectively, and means connecting the common junction of the first pair and the second pair of resistors to all the movable potentiometer contacts of both groups of attenuation branches.

4,225,835

ELECTROMAGNETIC SWITCHING RELAY

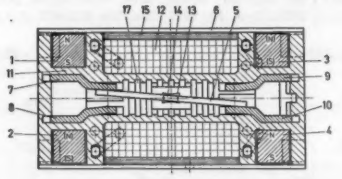
Franc Vrsnak; Jurica Zadravec, and Igor Pecenko, all of Ljubljana, Yugoslavia, assignors to Iskra Zp Ljubljana, O. Sub. O., Ljubljana, Yugoslavia

Filed Nov. 15, 1977, Ser. No. 851,749

Claims priority, application Yugoslavia, Nov. 15, 1976, 2791/76; Oct. 28, 1977, 2593/77

Int. Cl.[3] H01H *51/22*

U.S. Cl. 335—78 **4 Claims**



1. An electromagnetic switching relay having a switching sensitivity alterable under the influence of an external magnetic field, said relay comprising:

a coil form made from an insulating material;

a plurality of pole-shoes mounted in said coil form, said pole-shoes, also, acting as relay contacts.

a plurality of ferromagnetic inlays which exhibit magnetic lines of force, each one of said inlays being associated with a corresponding one of said pole-shoes, said inlays being mounted in said coil form so that the lines of force are not perpendicular to the corresponding pole-shoe;

a magnetic insulating means formed by said coil form for partially insulating said pole-shoes from the lines of force exhibited by said corresponding inlay;

a substantially flat ferromagnetic armature mounted for transverse rotation within said coil form, said armature operable in a first position for providing a conductive path between a number of pole-shoes and in a second position for providing a conductive path between a different number of pole-shoes; and

excitation coil means, surrounding a portion of said coil form and said armature, said coil means being sensitive to an electrical current for switching said armature to at least one of said two positions, wherein, upon rotation of said relay relative to said external magnetic field, the components of the lines of force exhibited by said inlays vary, resulting in a corresponding variation in the switching sensitivity of said armature, further comprising toroidal channels with a rectangular cross-section made inside the coil form.

4,225,836

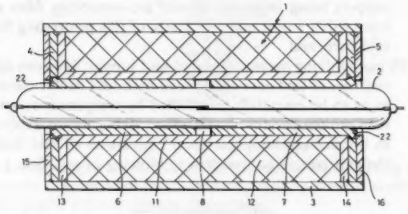
MAGNETIC RELAY

Etienne DeMaesschalck, Herderen, and Evrard Geelen, Tongeren, both of Belgium, assignors to C.P. Clare International, N.V., Tongeren, Belgium

Continuation-in-part of Ser. No. 790,967, Apr. 26, 1977, abandoned. This application Aug. 18, 1978, Ser. No. 934,805

Int. Cl.[2] H01H *11/00, 1/66, 51/00*

U.S. Cl. 335—153 **6 Claims**



1. In a magnetic relay having an electromagnetic coil with an open center extending lengthwise therethrough and switch contact means having coacting ends disposed lengthwise in said open center of said coil, the improvement which comprises:

an outer tube of magnetic material enclosing said coil lengthwise;

a pair of radially expandable disks of magnetic material positioned in said outer tube, across each end of the coil, each disk having a central opening aligned with said open center of the coil; and

a pair of inner tubes of magnetic material positioned axially aligned with each other through said central openings in said disks and in said open center of said coil about said switch contact means with the adjacent ends of said inner tubes spaced apart to form a gap adjacent said coacting ends of said switch contact means, said inner tubes being of a size in said open center of said coil to pass freely through said central openings in said disks and of a larger size at the location of said disks whereby said inner tubes urge said disks to expand radially into tight contact with the inside of said outer tube.

4,225,837

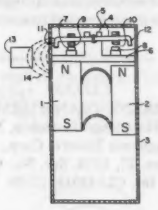
ARMATURE FOR A PROXIMITY SWITCH

Gerald L. Fowler, Louisville, Ky., assignor to General Equipment & Mfg. Co., Inc., Louisville, Ky.

Filed Dec. 28, 1978, Ser. No. 973,863

Int. Cl.[2] H01H *9/00*

U.S. Cl. 335—181 **3 Claims**



1. In a magnetic proximity device, in combination, a pivotally mounted magnetically permeable armature, a first permanent magnet having a pole of a first kind positioned adjacent a first end of the armature and urging said armature to rotate in a first direction, a second permanent magnet having a pole of a first kind adjacent a second end of the armature and urging said armature to rotate in a second direction, said armature being movable from a first position to a second position when magnetic flux is diverted from the armature by approach of a magnetically permeable operator, and a pair of magnetically permeable lips depending from the ends of said armature toward said magnets for concentrating the flux of the magnets at the ends of the armature, whereby the diversion of flux from the armature by an external magnetically permeable operator is increased.

4,225,838

ELECTRO-MAGNETIC RELAY WITH FIRST AND SECOND SPRING BIASING MEANS

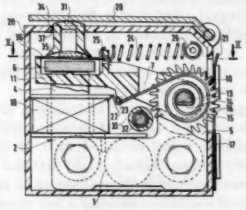
Edouard Le Roux, Barentin, France, assignor to Societe d'Appareillage Electrique Saparel, Saint-Marcellin, France

Filed Jul. 24, 1978, Ser. No. 927,222

Claims priority, application France, Jul. 29, 1977, 77 23429

Int. Cl.[2] H01F *7/04;* **H01H** *20/34*

U.S. Cl. 335—274 **9 Claims**



1. A high sensitivity electro-magnetic relay comprising:

a casing,

magnetic circuit means including two laterally spaced, U-shaped side pieces having arms at respective ends, one pair of said arms forming two fixed pole pieces,

an armature carrier pivotably supported to said other pair of arms,

an armature carried by said carrier and spanning across the ends of said two pole pieces and forming part of a magnetic circuit,

a permanent magnet sandwiched between said U-shaped

magnetic side pieces for holding said armature against said two pole pieces, and

spring biasing means for biasing the armature away from said pole pieces and against the attraction of the permanent magnet,

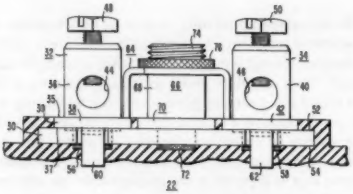
the improvement wherein said spring biasing means comprises a first, non-adjustable spring and a second, adjustable spring, and wherein said springs comprise independent component parts coupled to said armature for action in concert.

4,225,839

CURRENT TRANSFORMER

Paul W. Martincic, Hermitage Township, Mercer County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 27, 1978, Ser. No. 873,032
Int. Cl.³ H01F *27/04*
U.S. Cl. 336—96 **4 Claims**



1. An instrument current transformer comprising:

a circular magnetic core;

a toroidal secondary winding disposed in inductive relationship around said magnetic core so as to provide a central opening for admitting a primary conductor;

a terminal board having substantially flat top and bottom surfaces;

first and second terminals each including an upstanding body having sides extending from a top surface to a lower shoulder portion having top, side and bottom surfaces extending radially outward at the bottom of said body, said body having an opening extending through the sides thereof and a threaded hole extending through the body top surface to said opening with said hole threadably receiving a screw member for clamping an external lead conductor either to the terminal top surface or within said opening, and said bottom surface of said shoulder portion having integral rivet means for clamping the shoulder bottom surface to the top of said terminal board and the shoulder bottom surface further having integral wire connection means for connecting to said secondary winding below said terminal board;

a central upstanding support including a lower shoulder portion having top, side and bottom surfaces with said bottom surface being mounted on said terminal board substantially midway between said first and second terminals, and said support further including an upper threaded portion for threadably receiving a nut member;

an inverted U-shaped shorting bar having a center portion rotatably mounted on the upper portion of said central support with the downwardly extending ends thereof being arcuately movable about the support between a first position having said bar ends engaging said top surfaces of said shoulder portions of said first and second terminals so that said nut member is effective to clamp said bar ends thereto and a second position having said bar ends disengaged therefrom; and

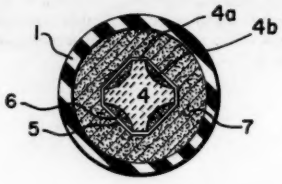
a casing formed of a molded thermoplastic electrical insulating material surrounding said magnetic core, said secondary winding and said terminal board, and being disposed in fluid sealing relation therewith and with the side surfaces of the aforenamed terminal shoulder portions so that said top surfaces thereof are exposed.

4,225,840

ELECTRIC FUSE WITH SUPPORT FOR HELICALLY WOUND FUSIBLE ELEMENT

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 4, 1979, Ser. No. 27,132
Int. Cl.³ H01H *85/38*
U.S. Cl. 337—273 **8 Claims**



1. An electric fuse comprising:

(a) a casing of electric insulating material;

(b) a pair of terminals closing the ends of said casing;

(c) a pulverulent arc-quenching filler disposed within said casing;

(d) a helically wound fusible element conductively interconnecting said pair of terminals;

(e) a non gas evolving support for said fusible element extending in a direction longitudinally of said casing, said support being immersed in said arc-quenching filler and comprising a core and a plurality of ribs protruding from said core; and

(f) gas evolving means affixed to said support between adjacent ribs of said core and spaced from said fusible element so as to be essentially unaffected by temperatures lower than arc-temperatures, said gas-evolving means evolving an arc extinguishing gas upon conversion of said fusible element into an arc incident to blowing of said fuse.

4,225,841

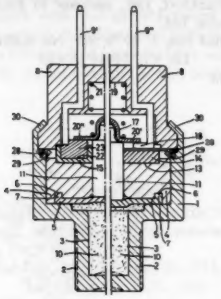
TEMPERATURE-DEPENDENT SWITCH

Roland Saur, Stuttgart, and Manfred Kurz, Ditzingen, both of Fed. Rep. of Germany, assignors to Behr-Thomson Dehnstoffregler GmbH, Kornwestheim, Fed. Rep. of Germany

Filed Jul. 18, 1978, Ser. No. 925,829
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2733045; Nov. 5, 1977, 2749615
Int. Cl.² H01H *37/46*
U.S. Cl. 337—393 **29 Claims**

1. In a temperature-dependent switch having a substance which expands when heated in a housing, a diaphragm positioned over the substance and a sealing part positioned over the diaphragm accepting a beaded edge on the diaphragm within an annular groove, the improvement wherein said housing is an integral housing, said substance (**10**) which expands or contracts as a function of temperature is positioned in a recess in said housing, said sealing part (**4**) and said diaphragm (**5**) also are positioned in said housing, and a transmission part (**11** and/or **12**), also positioned in said housing is coupled to said diaphragm, a prong plate (**8**) is fastened to said housing (**1**) for supporting at least one electrical prong, said sealing part (**4**)

being provided with at least one recess (13), and an insulating part (14 and/or 15 and/or 16) positioned in said at least one



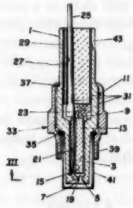
recess, said transmission part (11 and/or 12) being effectively connected with said electrical prong.

4,225,842

RESISTANCE TYPE OXYGEN SENSOR

Harold D. Schlesselman, Fostoria, and David C. Weber, Toledo, both of Ohio, assignors to Bendix Autolite Corporation, Fostoria, Ohio

Filed Jul. 25, 1979, Ser. No. 60,268
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—34 **21 Claims**



1. An oxygen sensor particularly adapted for detecting the oxygen concentration in the exhaust gas of an internal combustion engine exhaust system comprising:

a first generally cylindrical electrical insulator having an axial bore extending therethrough with one end of said bore being counterbored for a substantial distance, said first insulator having a radially enlarged outer portion spaced from the second end thereof;

an annular connector shell which fits over and engages said radially enlarged portion of said first insulator and is adapted to be secured in a wall of the exhaust system with the second end of said first insulator disposed in the exhaust stream;

a second electrical insulator of substantially uniform circular cross-section disposed in said bore in the first insulator and with a first end thereof adjacent the counterbore, said second insulator having at least two longitudinal bores therethrough;

a means for retaining said second electrical insulator in said bore in the first insulator;

a detector element having at least two electrical leads, said element being disposed adjacent the second end of the first insulator with the electrical leads thereof extending through the longitudinal bores in said second insulator into the counterbore in the first insulator;

at least two terminals disposed longitudinally in the counterbore in the first insulator with an outer end extending axially beyond the first end of the first insulator, said electrical leads each being electrically connected to the inner end of one of said terminals; and

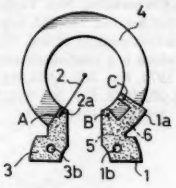
electrically nonconductive means for supporting the terminals in place in the counterbore.

4,225,843

VARIABLE ATTENUATOR

Moritoshi Nakamura; Ichiro Mutoh, and Tetsuhiro Kiyono, all of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1978, Ser. No. 920,641
Claims priority, application Japan, Jun. 29, 1977, 52-85811; Jun. 29, 1977, 52-85812
Int. Cl.² H01C *10/30*
U.S. Cl. 338—120 **7 Claims**



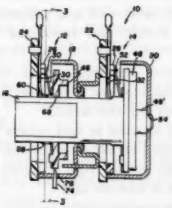
1. A variable attenuator including a resistance element, first and second conductive members each electrically connected to a respective end portion of said resistance element and having respective first and second terminals connected thereto, a sliding member slidingly movable along said resistance element between a first position on said first conductive member and a second position on said second conductive member, and means associated with said first conductive member for reducing the voltage drop between said sliding member and said first terminal when said sliding member is in said first position, said reducing means including a conductive bypass for electric current extending from said first conductive member to a part of said resistance element spaced therefrom to provide a path shunting current away from the current path including said sliding member and first terminal.

4,225,844

ADJUSTABLE VARIABLE RESISTANCE CONTROL SYSTEM

Ellis P. Lipp, and Mark L. Petre, both of Frankfort, Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,276
Int. Cl.³ H01C *10/00*
U.S. Cl. 338—135 **5 Claims**



1. In a variable resistor wherein a pair of rotors, each carrying electrical contact means, rotate while the electrical contact means engages separate resistance and collector paths, an adjustment means permitting adjustment of one rotor with respect to the other comprising:

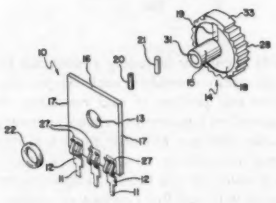
(a) a first rotor fixedly carried on shaft for rotation therewith,
(b) coupling means coupled to a second rotor to said shaft for rotation therewith comprising means extending from said second rotor and pinching said shaft, and
(c) means permitting said second rotor to be held against rotation while rotating said first rotor.

4,225,845

OPEN FRAME SINGLE TURN POTENTIOMETER WITH HELICAL COIL SPRING WIPER AND RESILIENT MEMBER

Randall C. Ragan, Rancho Sante Fe, Calif., assignor to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 723,932, Sep. 16, 1976, Pat. No. 4,121,188, which is a continuation of Ser. No. 642,328, Dec. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 452,130, Mar. 18, 1974, Pat. No. 3,964,011. This application Aug. 30, 1978, Ser. No. 938,715
Int. Cl.[2] H01C *10/34*
U.S. Cl. 338—174 **4 Claims**



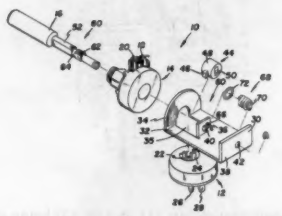
1. A variable resistance device comprising:
a substantially flat substrate having first and second opposed major surfaces and an opening therein and on the first surface a central collector ring and an arcuate resistance element;
terminal means on said substrate and connected to at least one end of said resistance element and to said collector;
conductor leads affixed to said terminal means, at least one conductor lead having a portion protruding above the first surface of said substrate;
a rotor having a main body portion located adjacent the substrate first surface and a projecting stem portion extending through the substrate opening and together forming a first annular rotor portion extending over and facing said second surface of said substrate, a second rotor portion adjacent said first portion and journalled for rotation in said opening in said substrate, and a third rotor portion facing said first surface of said substrate and including a recess therein facing said resistance element and said collector ring;
a multicontact wiper disposed in said recess and engaging said resistance element and said collector ring and making electrical contact therebetween;
a resilient support located in said recess behind said wiper and bearing against an arcuate portion of said wiper and constraining said wiper from rotating within its recess when said rotor is moved; and
resilient means circumferentially surrounding said opening and said rotor stem portion and located on said second surface of said substrate under and engaging said first annular rotor portion as a bearing surface and biasing said thrid rotor portion against said first substrate surface, said resilient means and first rotor portion serving to rotatably secure said rotor to said substrate.

4,225,846

SHAFT LOCKING MECHANISM HAVING COMBINATION SWITCH AND VARIABLE RESISTOR

Ellis P. Lipp, Frankfort, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Feb. 1, 1979, Ser. No. 8,601
Int. Cl.[3] H01C *10/50*
U.S. Cl. 338—198 **4 Claims**



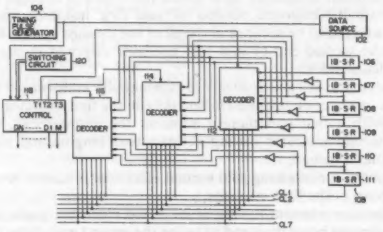
1. In a combination switch and variable resistor apparatus wherein rotation of shaft opens and closes said switch and varies a resistance of said variable resistor, a shaft locking and switching mechanism comprising:
(a) a frame having a pair of apertures therein,
(b) a shaft rotatably and axially movable in said apertures,
(c) cooperating first axial groove in said shaft, a second groove normal thereto in said shaft, and a tab carried by said frame,
(d) actuator means coupled to said shaft engaging with actuator means of said switch,
axial movement of said shaft in a predetermined direction disengaging said tab from said first groove and engaging said second groove to permit rotation of said shaft, rotation of said shaft engaging said actuator means with said switch actuator means and varying the resistance of said variable resistor, continued rotation causing said tab to align with said first groove to permit said shaft to be axially moved to engage same to prevent further rotation of said shaft.

4,225,847

DISPLAY CIRCUIT

Eiji Masuda, Kawasaki; Teruaki Tanaka; Tetsuo Yamaguchi, both of Yokohama, and Hiroaki Suzuki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 9, 1979, Ser. No. 19,248
Claims priority, application Japan, Mar. 16, 1978, 53-30243
Int. Cl.[2] G06K *15/18*; G04C *17/02*
U.S. Cl. 340—802 **8 Claims**



1. A data display circuit comprising a decoding means including a plurality of decoders which receive parallel data with predetermined delay time and decode the individual input parallel data, a plurality of common lines connecting in common the corresponding output terminals of said plurality of

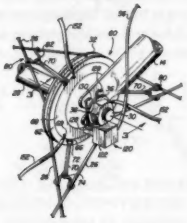
decoders, latch means including a plurality of latches with input terminals severally coupled to said common lines, control means for supplying said plurality of decoders with respective control signals with said predetermined delay time and transferring the output data from said individual decoders to said latch means through said common lines, and display means for displaying the stored contents of said latch means.

4,225,848

ELECTRIC LIGHTING SYSTEM FOR BICYCLE WHEELS

Robert E. Roberts, 2033 N. Sunset Rd., Apache Junction, Ariz. 85220

Filed Dec. 26, 1978, Ser. No. 972,675
Int. Cl.[2] B62J *3/00, 5/00*
U.S. Cl. 340—134 **10 Claims**



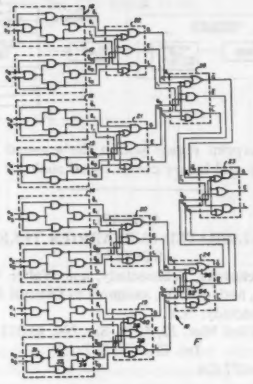
1. Bicycle lighting apparatus comprising, in combination:
conductive frame means;
wheel means, including
axle means for rotatably securing the wheel means to the frame means,
rim means spaced apart from the axle means,
spoke means extending from the axle means to the rim means for securing the rim means to the axle means, and the axle means and the spoke means are conductive and are electrically connected to the frame means;
a battery having a positive terminal and a negative terminal secured to the frame means for providing an electric current;
a first conductor electrically connected to one of the terminals of the battery;
switch means electrically connected to the first conductor and to the frame means for selectively connecting one terminal of the battery to the frame means;
second conductor means connected to the other terminal of the battery and electrically isolated from the frame means and from the first conductor;
nonconductive disc means secured to the wheel means and rotatable therewith;
conductive layer means secured to the nonconductive disc means;
brush means secured to the frame means but electrically isolated therefrom and including a conductive element biased against the conductive layer and electrically connected to the second conductor means for electrically connecting the conductive layer means to the battery;
light means secured to the wheel means remote from the axle means and rotatable with the wheel means, and including a housing capable of transmitting light, and
lamp means secured to the housing and electrically connected to the spoke means and to the conductive layer means for completing an electrical circuit from the battery means for illuminating the lamp means as the wheel means rotates.

4,225,849

N-BIT MAGNITUDE COMPARATOR OF FREE DESIGN

Hung C. Lai, Cupertino, Calif., assignor to Fujitsu Limited, Japan

Filed May 1, 1978, Ser. No. 901,412
Int. Cl.[3] G06F *7/04*
U.S. Cl. 340—146.2 **10 Claims**



1. An N-bit magnitude comparator of tree design comprising:
a magnitude comparator stage for receiving a pair of binary words each binary word comprised of "N" bits, the magnitude comparator state including "N" one-bit magnitude comparator circuits, each of said one-bit magnitude comparator circuits adapted to receive a bit of the same order of each binary word and providing one of three distinct output signals indicative of which of the input bits of the binary words is largest in magnitude or whether the input bits of the binary words are of equal magnitude; and
a first cascade stage comprising N/2 individual cascading circuits with each of said individual cascading circuits connected to receive the output of two of said one-bit magnitude comparator circuits, each of said individual cascading circuits having one-gate delay and providing output signals indicative of which of the output signals from the associated one-bit magnitude comparators is largest in magnitude or whether the input signals are of equal magnitude, the relative polarity of the output being inverted relative to the polarity of the output of the magnitude comparators.

4,225,850

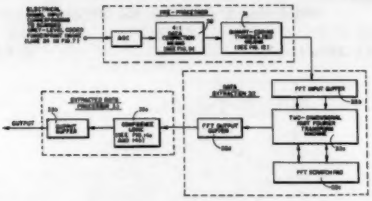
NON-FINGERPRINT REGION INDICATOR

Tien-Lin Chang, Orange; Jimmy H. Kabaian, Santa Ana; John P. Riganati, Yorba Linda, and Stanley A. White, Santa Ana, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 15, 1978, Ser. No. 960,813
Int. Cl.[2] G06K *9/00;* **A61B** *5/10*
U.S. Cl. 340—146.3 E **29 Claims**

1. A pre-edit signalling system responsive to an electrical signal analog of a scanned image for indicating the probable absence or presence of a non-fingerprint region of such image, said system comprising
a two-dimensional sequency function transform analyzer responsive to a binary-coded image signal for identifying discrete frequency terms occurring within a preselected bandwidth corresponding to a spatial frequency region associated with descriptions of a fingerprint image; and
logic means responsive to said bandwith limited transform analyzer for further identifying the relative energy level

of the bandwidth-limited spectral content of the binary-coded image signal as an indication of the inclusion of a

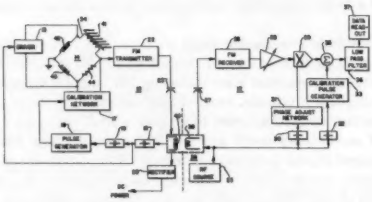


non-fingerprint region within the scanned image represented by said binary-coded signal analog.

4,225,851
SELF-CALIBRATED SUBCARRIER TELEMETRY SYSTEM

John M. Reschovsky, Schenectady, and Walter Whipple, III, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 22, 1979, Ser. No. 23,022
Int. Cl.[3] G01D *7/12*
U.S. Cl. 340—177 CA **8 Claims**



1. In combination with apparatus having a stationary member, and a heavy rotational member or rotor adapted to rotate at high speed within said stationary member, a telemetry system for detecting strain on a part of said rotational member comprising:

(a) a transducer-data transmission portion mounted on and rotatable with said rotational member;

(b) a stationary data reception-readout portion having means for generating a radio frequency (RF) signal, said RF signal being supplied to said transducer-data transmission portion and to said data reception-readout portion;

(c) means for inductively coupling signals between said transducer-data transmission portion and said data reception-readout portion;

(d) said transducer-data transmission portion including

(d1) a first means for frequency division of said RF signal to provide a lower frequency subcarrier signal;

(d2) a strain gage transducer adapted for excitation by said subcarrier signal and responsive to strain on said rotational member by producing a corresponding amplitude modulated signal at the subcarrier frequency;

(d3) an FM transmitter for receiving said amplitude modulated signal and generating a carrier signal for transmission through said inductive coupling means to said stationary data reception-readout portion, said carrier signal being frequency modulated by said amplitude modulated signal; and

(e) said data reception-readout portion including

(e1) a second means for frequency division of said RF signal to provide a reference signal equal in frequency to said subcarrier signal;

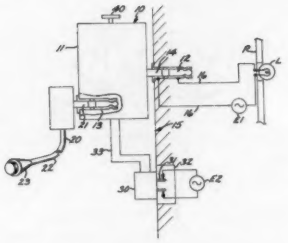
(e2) an FM receiver for receiving and demodulating said carrier signal to yield said amplitude modulated signal; and,

(e3) a synchronous detector having a first input for receiving said reference signal and a second input for receiving said amplitude modulated signal from said FM receiver, said synchronous detector producing a demodulated signal representative of strain on said rotational member.

4,225,852
PATIENT CARE TIMER

Ronald L. Waters, 1090 El Camino Dr.; Thomas J. Grady, 1122 Corona La., both of Costa Mesa, Calif. 92626; Thomas F. Brown, 324 Collidge Ave., Anaheim, Calif. 92801, and E. Shirley Long, 917 Claiborne Dr., Long Beach, Calif. 90807

Filed Feb. 6, 1978, Ser. No. 875,149
Int. Cl.[2] G08B *3/10*; **H04N** *7/00*
U.S. Cl. 340—286 R **6 Claims**



1. In a medical care facility including designated areas for the care of patients; a monitoring station for receiving signals enabled by said patients and signal generating means deployed proximate each said patient, said signal generating means including a plurality of signal lines each extending from said monitoring station to a corresponding wall jack proximate said patients a corresponding plurality of manually operable call switches each adapted for manipulation by said patients, and a corresponding plurality of connectors deployed from the respective ones of said call buttons for insertion into said wall jacks, the improvement comprising:

a resettable timer assembly including a plug adapted for insertion into said wall jack and provided with a receptacle in circuit with said plug for receiving said connector, said timer assembly including exciting means for producing electrical excitation, timing means connected to said exciting means for producing a timing signal a predetermined period of time after the receipt of said electrical excitation, manually operable resetting means connected to said timing means for restarting said timing means after said timing signal is produced thereby and for disabling said timing signal for yet another said predetermined period of time, and switch means connected across said receptacle rendered closed by said timing signal.

4,225,853
CONTROLLER FOR SIGNALLING SYSTEM

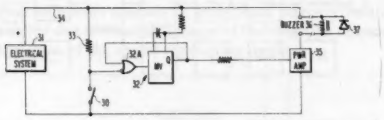
William J. Hamilton, Andover, Mass., assignor to Southall W. Hamilton, Andover, Mass.

Continuation-in-part of Ser. No. 772,756, Feb. 28, 1977, abandoned. This application May 5, 1978, Ser. No. 902,932
Int. Cl.[2] G08B *3/00, 5/00*
U.S. Cl. 340—328 **6 Claims**

1. A controller for use in signalling system that includes actuation means activated by one person desiring to signal a second person, electrically operated signal means for generating a warning signal to the second person and a power supply, said controller comprising:

A. sensing means for sensing the activation of the actuation means by the one person,

B. pattern generating control means connected to said sensing means for generating a self-completing predetermined control function defining a pattern of energization and deenergization for the warning signal, said pattern generating means being solely responsive to said sensing means



sensing activation of the actuation means and being self-setting, and

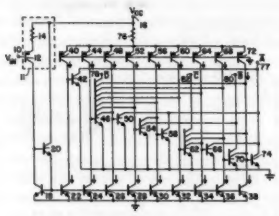
C. switching means for connection in circuit with the power supply and the signal means, said switching means being connected to said pattern generating control means for controlling the energization of the signal means solely in response to the predetermined control function generated by said pattern generating control means.

4,225,854

HIGH DENSITY ANALOG-TO-BINARY CODED DECIMAL CONVERTER

William F. Davis, and Howard G. Shumway, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 26, 1977, Ser. No. 836,631
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 AD **6 Claims**



1. An analog to binary coded decimal converter having an input terminal for receiving analog signals and four output terminals for providing a digital representation of the analog signal in a binary coded decimal format comprising:

(a) first through ninth I^2L gates each having an input and at least one output;

(b) first through ninth variable current sinks each having an output coupled to said input of said first through ninth I^2L gates respectively for sinking a specific variable maximum amount of current in response to the magnitude of said analog signal, said specific maximum amount of current of each of said first through ninth current sinks having a predetermined ratio to each other;

(c) conductive means interconnecting a plurality of said outputs of said I^2L gates with said inputs of said I^2L gates; and

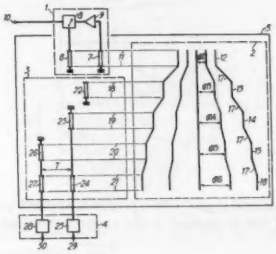
(d) each of said gate and sink combinations respectively having a source of current associated therewith to selectively enable each of the gates whereby an output signal having a binary coded decimal format is provided at the four output terminals.

4,225,855

ANALOG-DIGITAL CONVERSION DEVICE WITH SURFACE ELASTIC WAVES

Michel Feldmann, 45, rue Saint Lambert, 75015 Paris, and Jeannine Le Goff épouse Henaff, 3ter, Place Marquis, 92140 Clamart, both of France

Filed Oct. 3, 1978, Ser. No. 948,251
Claims priority, application France, Oct. 6, 1977, 77 30634
Int. Cl.[2] H03K *13/02*
U.S. Cl. 340—347 AD **9 Claims**



1. An analog-to-digital converter with intermediate frequency conversion, said converter comprising a 4-pole voltage controlled oscillator means and a filter means, both said oscillator means and said filter using an elastic surface wave piezoelectric substrate device wherein the improvement comprises emitter transducer means disposed on said substrate to launch surface waves along a forward track, said filter means being made of reflector means comprised of a network of spaced conductive filaments forming a receiving sub-network overlapping said forward track, a plurality of serially connected transmitting sub-network overlapping a corresponding plurality of backward tracks, the spacing between said conductive filaments of the network series increasing from a transmitting sub-network to the next of the sub-networks, and interconnection portions between said sub-networks, output transducer means overlapping said return tracks, and detector means responsive to said output transducer means for producing a combination of digital signals corresponding to an analog signal applied to a voltage controlled input of said 4-pole oscillator.

4,225,856

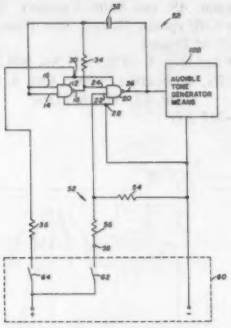
CIRCUIT MEANS FOR PROVIDING MULTIPLE AUDIBLE SIGNALS FROM AN AUDIBLE TONE GENERATOR MEANS

Richard L. Learn, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Oct. 27, 1978, Ser. No. 955,267
Int. Cl.[3] G08B *3/00*
U.S. Cl. 340—384 E **3 Claims**

1. Circuit means for providing multiple audible signals from an audible tone generator means comprising: at least two logic gates each having an output and at least two inputs, the output of a first logic gate determining an audible signal produced by the audible tone generator means, and a single control terminal for controlling the outputs of both logic gates, the output of the first logic gate being latched in a logical one state in response to the output of a second logic gate to produce a continuous audible signal when power is applied to the circuit and a logical zero is applied to the control terminal, the outputs of the

first and second logic gates providing charge and discharge paths respectively for a capacitor to produce a periodically



interrupted audible signal when power is applied to the circuit and a logical one is applied to the control terminal.

4,225,857

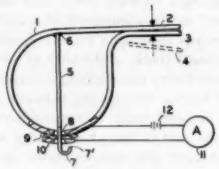
SPRING LOOP DOOR AND WINDOW ALARM SWITCH

Karl F. Frank, 1218 Casedale St., Leigh Acres, Fla. 33936

Continuation-in-part of Ser. No. 827,848, Aug. 26, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,839

Int. Cl.[2] G08B *13/08*

U.S. Cl. 340—545 **6 Claims**



1. Door and window switch alarm means comprising,

a strip of conductive spring material formed in a loop with extending ends adapted to be clamped together by closed doors and windows,

a conductive rod member having a first contact at one end, the other end of said rod member being fixedly connected to one side of the loop, the contact end extending through a hole in the other side of the loop,

an apertured second contact member mounted on and insulated from the outside of the other side of the loop,

whereby the loop is unclamped when the door or window is opened and a circuit is completed between the first and second contacts.

4,225,858

DOPPLER INTRUSION DETECTOR WITH DUAL PHASE PROCESSING

Martin T. Cole, East Bentleigh, and Graeme R. Strahan, Upwey, both of Australia, assignors to I.E.I. Proprietary Limited, Victoria, Australia

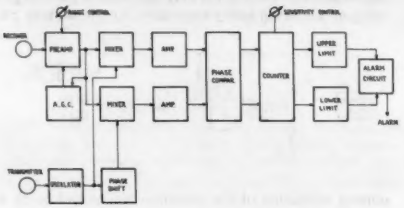
Filed Nov. 10, 1977, Ser. No. 850,270

Claims priority, application Australia, Nov. 10, 1976, PC8074

Int. Cl.[2] G08B *13/18*

U.S. Cl. 340—554 **8 Claims**

1. In an intrusion detector in which a signal generated by a microwave or ultrasonic generator is radiated into an area under surveillance and reflected from every object in the area; a receiver to receive said reflected signal and to present said reflected signal to a pair of mixers, each said mixer mixing said reflected signal with a portion of the transmitter signal, the improvement comprising (a) splitting of said portion of said transmitter signal into two paths, and (b) introducing a relative phase difference between said two paths, the resultant signals being fed into said mixers to produce Doppler signals of equal



frequency and amplitude but differing phase, said Doppler signals being presented to phase detecting means having two output channels controlled such that only one such channel may produce an output pulse at any instant, the channel outputs representing incremental and decremental movement of said objects in said area respectively.

4,225,859

METHOD AND APPARATUS FOR MONITORING SOUND-CONDUCTING MEDIA

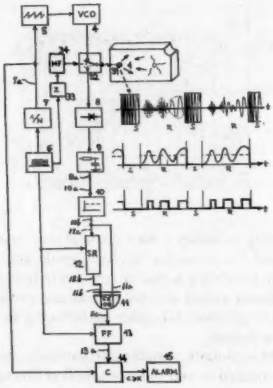
Alois Zetting, Herrliberg, and Markus Köpfli, Wil-St. Gallen, both of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Division of Ser. No. 743,392, Nov. 19, 1976, Pat. No. 4,142,188. This application Apr. 27, 1978, Ser. No. 900,725

Claims priority, application Switzerland, Dec. 8, 1975, 15848/75; Sep. 29, 1976, 12296/76

Int. Cl.[3] G08B *13/22*

U.S. Cl. 340—566 **19 Claims**



1. A method of monitoring vibration characteristics of sound-conducting media, comprising the steps of:

providing at least one sound-conducting medium;

transmitting sound vibrations to the sound-conducting medium;

controlling the frequency of the transmitted sound vibrations so as to periodically pass through a predetermined frequency range during successive frequency throughpass periods separated by interval periods during which the transmission of the sound to the medium is interrupted;

receiving the returned frequency spectrum of the sound vibrations at the sound-conducting medium;

comparing the amplitude course or phase course of the received sound vibrations during a given evaluation period comprising a frequency throughpass period and an interval period with the amplitude course or phase course during a preceding evaluation period;

each said evaluation period being larger than the frequency throughpass period; and

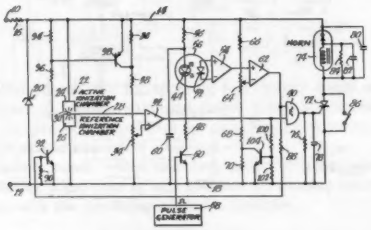
triggering an alarm when there are present deviations of both amplitude courses or both phase courses from one another due to a sudden change of the vibration resonance spectrum of the sound-conducting media.

4,225,860

SENSITIVITY CONTROLLED DUAL INPUT FIRE DETECTOR

Frederick J. Conforti, Aurora, Ill., assignor to Pittway Corporation, Northbrook, Ill.

Filed Jan. 15, 1979, Ser. No. 3,728
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—629 **14 Claims**



1. A warning device for detecting the occurrence of predetermined phenomena, comprising first detector means responsive to the phenomena for generating a first signal upon the occurrence thereof; second detector means responsive to the phenomena for generating a second signal upon the occurrence thereof, said first and second detector means having selected discrete sensitivities to predetermined concentrations of the phenomena to generate said first and second signals; means for changing the sensitivity of said first detector means to the phenomena from a first to a second discrete value upon generation of said second signal; means for changing the sensitivity of said second detector means to the phenomena from a third to a fourth discrete value upon generation of said first signal; and means for indicating the simultaneous generation of said first and second signal.

4,225,861

METHOD AND MEANS FOR TEXTURE DISPLAY IN RASTER SCANNED COLOR GRAPHIC

Glen G. Langdon, Jr., San Jose, and Patrick E. Mantey, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

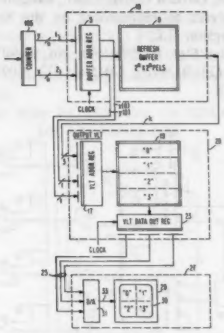
Filed Dec. 18, 1978, Ser. No. 970,598
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—703 **6 Claims**

1. A method for creating the display illusion of roughness or texture in color patterns for a raster scanned display surface by positioning pels of different color values in adjacent positions and then replicating the patterns automatically, the method steps comprise:

assigning a color number k for each pattern to be displayed;

creating a table in a memory associating a color value v for the relative pel position h, j in the m×n pel array of the pattern having the address k, i, j, where $0 \leqq i \leqq m-1$, and $0 \leqq j \leqq n-1$; and

reiteratively displaying the color value v on the surface and accessing the table in the memory at the address k, i, j+1



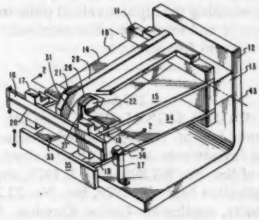
in order to obtain the color value v′ at the next successive display position i, j+1.

4,225,862

TUNING FORK OSCILLATOR DRIVEN LIGHT EMITTING DIODE DISPLAY UNIT

Oliver D. Johnson, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1979, Ser. No. 17,863
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—755 **30 Claims**



1. A tuning fork oscillator driven display apparatus comprising

a supporting member,

a display unit base,

means for resiliently suspending said base from said supporting member,

at least one display arm fixed to and extending from said base,

a plurality of light sources mounted on said display arm in at least one line,

at least one counterbalancing arm fixed to and extending from said base parallel to said display arm,

means for oscillating said display arm and said mounted light sources and for oscillating said counterbalancing arm in the opposite direction fixed to and extending from said base, and

pulsing means for each of said plurality of light sources to permit at least one on light for each of a plurality of positions through which said oscillator moves said line of light sources.

4,225,863

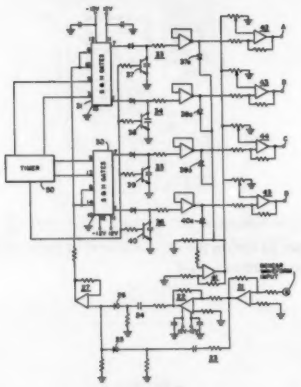
SIMPLIFIED SYSTEM FOR ESTIMATING PULSE RADAR DOPPLER FREQUENCY

Robert K. Dahlin, Garden Grove, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1979, Ser. No. 80,907

Int. Cl.³ G01R *23/02*; G01S *13/02*; H03K *4/02*

U.S. Cl. 343—7.5 **4 Claims**



1. In a system having a staircase waveform signal which is amplitude modulated in essentially a sinusoidal manner, the improvement comprises a method of rapidly determining the frequency of the sinusoidal waveform by the steps of: differentiating the staircase waveform signals so as to get a train of pulses whose amplitude corresponds to the waveform; dividing this train into a plurality of channels; utilizing a sample and hold circuit each channel to retain the amplitude of the pulse in that channel; selecting the highest valued pulse in the sampling and hold circuits; and using the pulse amplitude to define the sinusoidal waveform frequency.

4,225,864

RADAR SIGNAL PROCESSORS

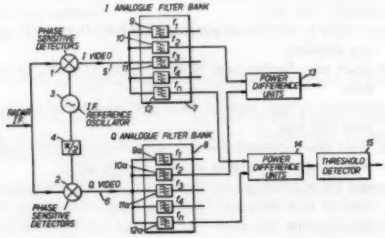
John Lillington, Isle of Wight, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Continuation of Ser. No. 901,803, May 1, 1978, abandoned. This application Mar. 20, 1979, Ser. No. 22,336

Claims priority, application United Kingdom, May 2, 1977, 52-18359

Int. Cl.² G01S *9/42*

U.S. Cl. 343—7.7 **6 Claims**



6. A radar system comprising filter means for dividing radar video signals into a plurality of different frequency bands representing pairs of upper and lower side bands, a plurality of comparator means each responsive to a pair of upper and lower side bands so that one comparator means is provided for each pair of said side bands, said comparator means being operative to compare the spectral power in each upper side band with the spectral power in each corresponding lower side band, and threshold detector means responsive to said comparator means for providing an output signal indicative of the presence of a target if a comparator output signal exceeds a predetermined threshold level.

4,225,865

GAIN-CONTROLLED AMPLIFIER CIRCUITS

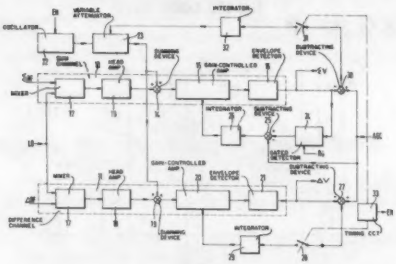
Hugh McPherson, West Linton, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed Mar. 15, 1979, Ser. No. 20,741

Claims priority, application United Kingdom, Mar. 23, 1978, 11812/78

Int. Cl.³ G01S *13/14, 7/40*

U.S. Cl. 343—16 M **8 Claims**



1. A gain-controlled amplifier circuit which includes a pair of gain-controlled amplifiers, signal generating means operable to generate a pilot signal of constant amplitude during a repeated correction time interval, attenuator means operable to control the level at which said pilot signal is applied equally to the inputs of said two amplifiers, a first automatic gain control loop comprising means for subtracting the output of one amplifier from a reference gain control signal at a time other than during the correction time interval to derive a first error signal for application to the gain control input of said one amplifier, a second automatic gain control loop comprising means for subtracting the output of the other amplifier from the reference gain control signal to derive a second error signal for application to the gain control input of the said other amplifier only during the correction time interval, and a correction loop comprising means for subtracting the output of said one amplifier from the reference gain control signal to derive a correction signal for application to the attenuator means during the correction time interval to control the level of the pilot signal applied to the two amplifiers.

4,225,866

AUTOMATIC FAILURE-RESISTANT RADAR TRANSMITTER

Arnold M. Levine, Chatsworth, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,349

Int. Cl.³ G01S *7/40*

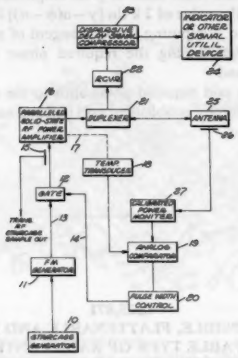
U.S. Cl. 343—17.7 **4 Claims**

1. A failure resistant pulsed radar system transmitter of the FM chirp type comprising:

first means having a radio frequency input and radio frequency power output and N substantially identical solid-state radio frequency amplifier units operating in parallel electrically and each contributing 1/N of the predetermined level of the total output power of said transmitter, said units each operating at a power level below its maximum rating;

second means comprising apparatus for providing successive pulses of radio frequency energy for driving said first means, said second means varying the transmitted frequency throughout each of said successive pulses;

third means responsive to said first means power output for developing a control signal as a function of said total



output power, and for applying said control signal in a manner to maintain said total output power substantially at said predetermined level by modifying the duration of each of said successive pulses;

and fourth means within said first means for substantially isolating failed ones of said modules for limiting interaction with the remaining operative modules.

4,225,867

ORIENTATION SYSTEM

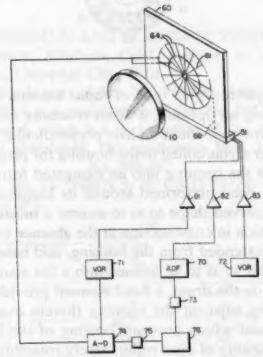
Harold A. Gell, 13720 Lockdale Rd., Silver Spring, Md. 20906

Filed Sep. 19, 1978, Ser. No. 943,719

The portion of the term of this patent subsequent to Dec. 6, 1994, has been disclaimed.

Int. Cl.³ G01S *3/04*

U.S. Cl. 343—113 R **16 Claims**



1. A relative azimuth indication system, comprising:

an indicator activating means including a plurality of radiation emitting devices of a type not requiring an evacuated atmosphere;

an indicator including an image area which fluoresces when radiated by said radiation emitting devices;

means to selectively energize individual ones of said radiation emitting devices; and

means to rotate said indicator relative to said indicator activating means.

4,225,868

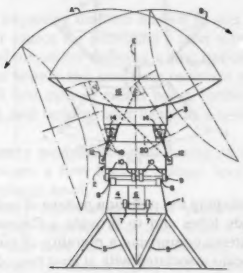
LOW-PROFILE X-Y ANTENNA PEDESTAL UTILIZING MULTI-HINGE POINTS TO PROVIDE ANGULAR MOTION FOR EACH AXIS

John T. Mazar, Sebastian, Fla., assignor to Harris Corporation, Cleveland, Ohio

Filed Mar. 31, 1978, Ser. No. 892,201

Int. Cl.² H01Q *3/03*

U.S. Cl. 343—765 **14 Claims**



1. An antenna pedestal for providing angular motion comprising:

a base, a subassembly supported on said base, pivot means between said base and said subassembly for enabling said subassembly to be angularly disposed with respect to said base about a pair of parallel axes, first linear actuator means connected between said base and said subassembly for angularly displacing said subassembly about one of said pair of axes through a first arc sector, and second linear actuator means connected between said base and said subassembly for angularly displacing said subassembly about the other of said axes through a second arc sector in a common plane with the first arc sector, said first linear actuator means causing displacement of said subassembly in a direction opposite that caused by said second linear actuator means, wherein said subassembly is a lower subassembly and wherein the pedestal further comprises an upper subassembly supported on said lower subassembly, further pivot means between said lower and upper subassemblies for enabling said upper subassembly to be angularly displaced with respect to said lower subassembly about a further pair of parallel axes, said further axes being orthogonal with respect to the axes about which the lower subassembly is disposed relative to said base, third and fourth linear actuator means connected between said upper and lower subassemblies for displacing said upper subassembly about said further axes through third and fourth arc sectors, said third and fourth arc sectors being in a plane which is orthogonal with respect to the plane of the first and second arc sectors.

4,225,869

MULTISLOT BICONE ANTENNA

Dieter R. Lohrmann, Lanham, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 26, 1979, Ser. No. 24,234

Int. Cl.³ H01Q *13/04*

U.S. Cl. 343—773 **9 Claims**

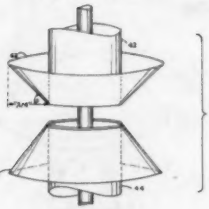
1. An antenna comprising:

(a) wave conducting means having a characteristic impedance;

(b) a plurality of interruptions in the form of a slot in said

wave conducting means for radiating electromagnetic waves;

(c) matching means associated with said interruptions for providing impedance transformation of free space transmission impedance to a value more compatable with said characteristic impedance of said wave conducting means, said matching means comprising bi-conical segments having a predetermined opening angle and extending from said wave conducting means substantially by one-quarter electrical wavelength; and



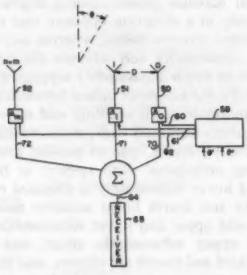
(d) means for shaping the radiation pattern of said antenna to minimize side lobes and to provide a flattened disc-like radiation pattern comprising a plurality of said bi-conical matching means associated with at least two of said plurality of interruptions, said at least two bi-conical matching means having different opening angles and thereby having differing characteristic impedances, for achieving said disc-like radiation pattern.

4,225,870

NULL STEERING ANTENNA

Gene R. Marner, Chesterfield, Mo., and Nathan Marchand, Greenwich, Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 10, 1978, Ser. No. 904,366
Int. Cl.[2] H01Q 3/26
U.S. Cl. 343—854 **20 Claims**



1. In an antenna system of n antenna wherein a desired signal arrives in the general direction of main receiving beam and an undesired signal arrives in a direction at least slightly different from the direction of said desired signal; said main receiving beam having a main lobe in the direction of said desired signal and a minor lobe in the direction of said undesired signal, a method for generating a high quality beam in the direction of said desired signal and a null in the direction of said undesired signal comprising the steps of: calculating the progressive phase shift (ϕ) necessary to create a maximum in said main lobe;

calculating the progressive phase shift (α) required to create a maximum in said minor lobe;

determining the phase of said minor lobe relative to the voltage of said main beam;

determining the amplitude of said minor lobe;

calculating the ratio (k) of the amplitude of said minor lobe relative to the peak amplitude of said main beam;

calculating the phase relationship (γ) between said minor lobe and said main beam at peak amplitude;

calculating the value of $2\,k \sin [\gamma - n(\phi - \alpha)]$ for each of said n antennae; computing the arc tangent of each said value thereby determining the required phase shift for each antenna; and

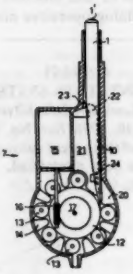
adding each said required phase shift to the corresponding antenna thereby establishing said null and said high quality beam.

4,225,871

COLLAPSIBLE, FLATTENABLE AND DRUM WRAPPABLE TYPE OF RADIO ANTENNA, PARTICULARLY FOR MOTOR-VEHICLES AND MOVING EQUIPMENTS

Luigi Ramari, Piazza Bottini,, 1-Milan, Italy

Filed Jun. 19, 1978, Ser. No. 916,510
Int. Cl.[2] H01Q 1/14, 1/32
U.S. Cl. 343—877 **15 Claims**

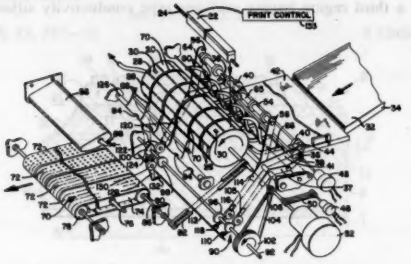


1. A collapsible stylus type of radio antenna comprising a housing having an opening, a drum rotatably mounted in the housing for rotation about an axis perpendicular to the opening, a receiver stylus coiled in the housing for projection therefrom through the opening into an elongated form, said stylus comprising a band preformed around its longitudinal axis according to a curved shape so as to assume a substantially tubular configuration in cross-section in the absence of stress when in a position extended from the housing, said band being sufficiently resilient so as to be opened into a flat state and wound in such state on the drum, a fixed element provided internally of the housing adjacent the opening therein over which the band passes and which prevents bowing of the band at such position, a plurality of idler rollers freely rotatably mounted in the housing on axes parallel to the axis of rotation of the drum and arranged in a circle around and spaced radially from the drum a sufficient distance to accommodate said band and for limiting band sliding frictions with respect to the housing, fixed surfaces interposed between the idler rollers to promote a correct superimposition of the band spirals on and off the drum, and a series of idler rollers carried by the housing at the area of the opening to promote the changing of the band from one shape to another.

4,225,872
INK JET PRINTER

George Marinoff, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 31, 1979, Ser. No. 7,999
Int. Cl.[2] G01D 15/18, 15/24; B65H 5/22
U.S. Cl. 346—75 15 Claims

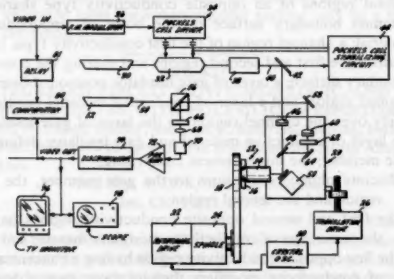


1. An ink jet printer comprising:
rotatable support means for supporting a sheet of paper,
rotary drive means for rotating said support means,
an ink jet print head mounted adjacent said support means for printing on a sheet of paper supported thereon during a plurality of successive rotations of said support means,
a print control means for providing print control signals to said ink jet print head,
paper supply means for loading a sheet of paper onto said support means such that said sheet of paper is supported on said support means,
paper ejector means for removing a sheet of paper from said support means, and
control means for controlling operation of said paper supply means and said paper ejector means such that as a sheet of paper is removed, after a plurality of rotations on said support means, another sheet is concurrently loaded onto said support means, whereby the time required for loading and unloading a sheet of paper is minimized and the overall speed of the printer enhanced.

4,225,873
RECORDING AND PLAYBACK SYSTEM

John S. Winslow, Altadena, Calif., assignor to MCA DiscoVision, Inc., Universal City, Calif.

Continuation-in-part of Ser. No. 714,133, Aug. 13, 1976, abandoned, which is a continuation of Ser. No. 508,815, Sep. 24, 1974, abandoned, which is a continuation of Ser. No. 333,560, Feb. 20, 1973, abandoned. This application Mar. 27, 1978, Ser. No. 890,407
Int. Cl.[3] H04N 5/76; G01D 15/14
U.S. Cl. 346—76 L 7 Claims



1. Information handling apparatus for storing and reading back a continuously variable frequency modulated signal as a non-image, spatially variable and discrete physical pattern upon a record carrier, comprising:
signal source means for providing a frequency modulated information signal to be recorded, said signal having its information content in the form of a carrier signal having frequency changes in time representing said information to be recorded;
a record carrier including a substrate having a laser radiation responsive surface for retaining a physical change representative of said information signal;
said laser radiation responsive surface having a threshold power level above which one such physical change is formed;
means for imparting uniform motion to said record carrier;
a first laser source for providing a laser writing beam;
first optical means for defining a first optical path between said laser source and said laser radiation responsive coating, said first optical means being further employed for focusing said writing laser beam to a spot upon said surface;
said frequency modulated signal having an amplitude varying between a first higher voltage level and a second lower voltage level;
laser intensity modulating means positioned in said first optical path between said laser source and said record carrier, said laser intensity modulating means operating over a range between a higher laser transmitting state and a lower laser transmitting state for intensity modulating said writing laser beam with said frequency modulated information signal to be recorded;
said intensity of said writing laser beam being adjustable relative to said threshold power level of said laser radiation responsive surface;
said laser beam issuing from said laser intensity modulating means having a prescribed reference intensity level which is intermediate said higher laser transmitting state and said lower laser transmitting state, said prescribed intensity level being equal to said threshold power level of said laser radiation responsive surface;
said writing laser beam issuing from said laser intensity modulating means during the period corresponding to the period said writing laser beam exceeds said prescribed intensity level being of sufficient intensity for interacting with said radiation responsive surface while said surface is in motion, said writing laser beam corresponding to said period during which said writing laser beam exceeds said prescribed intensity level being of sufficient intensity for imparting a permanent and substantially uniform physical change during said period representative of said information signal;
said writing laser beam issuing from said laser intensity modulating means during the period corresponding to the time said writing beam is less than said prescribed intensity level having an intensity less than the intensity required for altering said radiation responsive surface;
said laser intensity modulating means being responsive to said frequency modulated signal and changing between its higher light transmitting state and its lower light transmitting state during each cycle of said frequency modulated signal for intensity modulating said writing laser beam with the frequency modulated electrical signal to be recorded by continuously adjusting the intensity of said writing laser beam under the control of said frequency modulated electrical signal for continuously varying the time said writing beam exceeds its prescribed reference intensity level and is less than its prescribed reference intensity level to track the instantaneous frequency of said frequency modulated signal;
said higher laser transmitting state corresponding to said first voltage level of said frequency modulated signal, and said lower laser transmitting state corresponding with said second voltage level of said frequency modulated signal;

said writing laser beam passing through said laser intensity modulating means and focusing upon said radiation responsive surface by said first optical means having sufficient intensity to form a first permanent and substantially uniform physical change in said surface for a first portion of each cycle of said frequency modulated signal during the time that said frequency modulated signal is at said first voltage level, said change being continuously variable in its length to represent the duration of said first portion of the cycle;

said writing laser beam passing through said laser intensity modulating means and focused upon said radiation responsive surface by said first optical means falling below said intensity required to form a physical change in said surface for the remaining portion of each cycle of said frequency modulated signal during the time that said frequency modulated signal is at said second voltage level, the length of the spacing between adjacent physical changes being continuously variable to represent the duration of said remaining portion of the cycle for recording upon said record carrier a discrete physical pattern representing a non-image spatially variable form of the information to be recorded from which said information signal can be recovered;

a second laser source for providing a second laser reading beam;

a second optical means for defining an optical path between said second laser source and said record carrier including a portion of said first optical path, said second optical means being further employed for focusing said second laser beam down to a spot upon said radiation sensitive surface;

said second laser reading beam being of sufficient intensity for illuminating selected portions of said surface of said carrier arranged as a non-image, spatially variable and discrete physical pattern, said second laser reading beam being specularly reflected from unaltered illuminated portions, and said second laser reading light beam being non-specularly reflected from the other of said illuminated portions;

said second optical means being further employed for collecting said reflections from said illuminated portions; and

light sensing means responsive to said reflections for generating a frequency modulated electrical signal corresponding to said reflections, said last mentioned frequency modulated signal having its information content in the form of a carrier frequency having frequency changes in time responding to the stored information whereby the informational content of the non-image, spatially variable and discrete physical pattern formed upon said record carrier is retrieved as a continuously variable frequency modulated signal.

4,225,874

SEMICONDUCTOR DEVICE HAVING INTEGRATED DIODE

Ramon U. Martinelli, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 9, 1978, Ser. No. 884,857

Int. Cl.[3] H01L *29/90, 29/06, 29/72, 29/74*

U.S. Cl. 357—13 **6 Claims**

1. A semiconductor device comprising:

a body of semiconductor material having first and second major opposing surfaces;

a first region within said body having one type conductivity, said first region being adjacent said second surface;

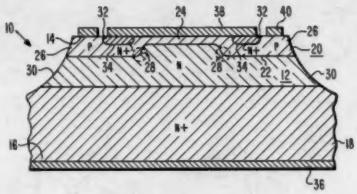
a second region within said body adjacent said first surface having a second type conductivity and forming a first PN junction with said first region at the interface therebetween, said first PN junction having a positionally dependent breakdown voltage associated therewith and having a point of lowest value of breakdown voltage therealong;

said second region comprising a relatively thicker portion and a relatively thinner portion, said relatively thicker portion substantially completely peripherally surrounding said relatively thinner portion;

said second region having a surface impurity concentration on the order of about 10^{17} carriers/cm^3, said relatively thicker portion extends to a depth of about 60 micrometers from said first surface; and

said relatively thinner portion extending to a depth of about 30 micrometers from said first surface;

a third region having said one type conductivity adjacent



said first surface and extending into said second region, said third region forming a second PN junction with said second region at the interface therewith;

said third region extending into said relatively thicker portion of said second region and substantially completely peripherally surrounding said relatively thinner portion; and

a first electrode overlying and electrically contacting said third region and the portion of said second region overlying said point of lowest value.

4,225,875

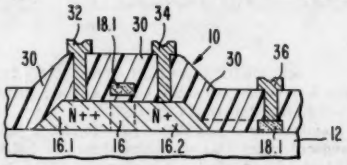
SHORT CHANNEL MOS DEVICES AND THE METHOD OF MANUFACTURING SAME

Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 19, 1978, Ser. No. 897,807

Int. Cl.[2] H01L *29/78*

U.S. Cl. 357—23 **5 Claims**



1. In an improved semiconductor device having a body of semiconductor material of a first conductivity type; first and second regions of an opposite conductivity type sharing a common boundary surface on the body of semiconductor material; a channel region of the first conductivity type, intermediate the first and second regions and sharing the common boundary surface; a layer of gate insulator positioned over the channel region; and a layer of conductive material positioned solely over the channel region on the layer of gate insulator, the layer of conductive material and gate insulator defining a gate member; the improvement comprising;

discrete ohmic connections to the gate member, the first region and the second region;

the first and second opposite conductivity regions having the same type of conductivity modifiers therein; and

the first opposite conductivity region having a concentration of conductivity modifiers therein about two orders of magnitude higher than the second opposite conductivity type region.

4,225,876

MONOLITHICALLY INTEGRATED SEMICONDUCTOR ARRANGEMENT

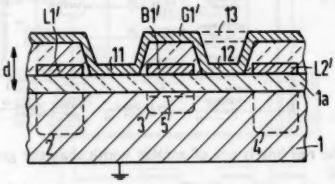
Karlheinrich Horninger, Eglharting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,485

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1977, 2740154

Int. Cl.² H01L 27/14

U.S. Cl. 357—23 9 Claims



1. A monolithically integrated semiconductor arrangement comprising:

(a) a plurality of first lines of a first type which run parallel to one another and are provided with end-side, first terminals;

(b) a plurality of second lines of a second type which run parallel to one another crossing beneath the first lines and are connected via end-side load elements to a supply voltage terminal, second terminals being provided at a connection of the second lines to the load elements;

(c) a plurality of reference potential lines which are adjacent to the second lines, a series of selected crossing points of the first and second lines forming a coupling element which can be operated via the first line and by which the second line can be connected to an adjacent reference potential line;

(d) a doped semiconductor layer having a surface;

(e) said second lines and the reference potential lines being formed of strip-like members of a second conductive coating which are separated by a thin insulating layer from the surface of the doped semiconductor layer;

(f) said reference potential lines extending to first peripheral oppositely doped surface zones provided with reference potential terminals;

(g) said second lines extending to second peripheral oppositely doped surface zones having the second terminals;

(h) the second oppositely doped zones being connected via load elements to the supply voltage terminals; and

(i) the first lines being arranged above the second lines and reference potential lines and comprising strip-like members of a first electrically conductive coating which approach the semiconductor surface closely only in a region of said crossing points selected for coupling and are there separated from the semiconductor surface only by a thin insulating layer.

4,225,877

INTEGRATED CIRCUIT WITH C-MOS LOGIC, AND A BIPOLAR DRIVER WITH POLYSILICON RESISTORS

Steven W. Miles, Dudley, and Paul R. Emerald, Sterling, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 5, 1978, Ser. No. 939,506

Int. Cl.² H01L 27/02

U.S. Cl. 357—41 7 Claims

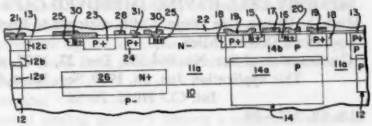
1. An integrated logic-controlled driver circuit comprising a silicon crystal wafer of P-type; and N-type epitaxial layer having been grown on a face of said wafer; electrical components being formed in said epitaxial layer and including a complimentary pair of MOS transistors, a PNP and an NPN transistor; an insulative film on the surface of said epitaxial layer; a polysilicon resistor formed over said insulative film,

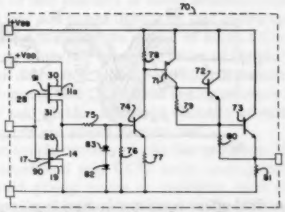
said PNP transistor, NPN transistor and pair of MOS transistors being in three pockets of said epitaxial layer, respectively, that are electrically isolated from one another,

the N-channel transistor of said MOS pair including a P-type well region extending completely through said epitaxial layer,

said N-channel transistor further including a shallow heavily doped annular surface region of P-type at the interface between said well region and the surrounding of said N-type epitaxial layer,

the P-channel transistor of said MOS pair having spaced P-type source and drain regions at said surface,





said PNP transistor having at said surface a P-type emitter region and spaced outwardly therefrom an annular P-type collector region,

said NPN transistor having at said surface a P-type base region and an N-type emitter region formed therein,

said resistor being comprised of a polysilicon layer containing ion implanted impurities extending from the outer surface thereof substantially only part way through said polysilicon layer, and

said PNP and NPN transistors and said resistor comprising a high voltage driver portion, and said N-channel and P-channel transistors comprising a logic portion, respectively, of said logic-controlled driver circuit.

4,225,878

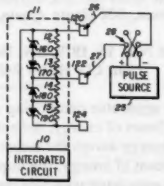
INTEGRATED CIRCUIT ON CHIP TRIMMING

Robert C. Dobkin, Hillsborough, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 8, 1979, Ser. No. 18,815

Int. Cl.² H01L 27/10

U.S. Cl. 357—51 8 Claims



1. In integrated circuit trimming, wherein a series of passive circuit elements are provided with a shunting zener diode and a series of circuit pads are connected to said diodes whereby each zener diode can selectively be coupled to a source of reverse potential that is greater than the reverse breakdown of

said diode and said source is capable of supplying sufficient current to cause said diode to short itself permanently thereby to bypass said element, the improvement comprising:

means for connecting adjacent zener diodes in said series in back-to-back relationship; and

means for making pad connections only to adjacent pairs of back-to-back zener diodes whereby the diode in said pair is subjected to a reverse polarity pulse when said diode is to be shorted and the pulse polarity can be reversed when the other diode in said pair is to be shorted, and whereby a reduced bonding pad count is achieved.

4,225,879

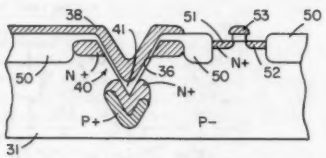
V-MOS FIELD EFFECT TRANSISTOR FOR A DYNAMIC MEMORY CELL HAVING IMPROVED CAPACITANCE

Mark A. Vinson, San Diego, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 864,383, Dec. 27, 1977, abandoned. This application Jan. 26, 1979, Ser. No. 6,660

Int. Cl.[2] H01L *29/06*

U.S. Cl. 357—55 **8 Claims**



1. A field effect transistor comprising:

a monocrystalline unitary substrate of one conductivity type, said substrate having a surface and uniform dopant concentration;

a region in said substrate adjacent to said surface and having a conductivity of a second conductivity type;

a V-shaped recess in said substrate extending from said surface through said region of said second conductivity type, said recess being defined by recess surfaces;

a second region of said second conductivity type in said unitary substrate, said second region being formed adjacent to said recess surface at least at the tip of the V by implanting ions through an aperture that overlies and is smaller than the top of said V:

an oxide layer covering the surfaces of the V-shaped recess; and

a gate electrode material covering at least a portion of said oxide layer in said V-shaped recess.

4,225,880

ENERGY-EFFICIENT BEAM-INDEX DISPLAYS WITH PROGRAMMABLE POWER SUPPLIES

David M. Goodman, 952 Santa Queta, Solana Beach, Calif. 92075

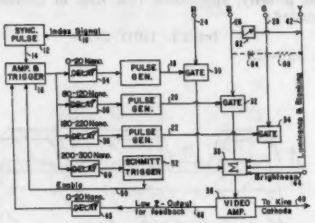
Filed Nov. 16, 1978, Ser. No. 961,280

Int. Cl.[2] H04N *9/22*

U.S. Cl. 358—66 **24 Claims**

1. In a display apparatus comprising a target screen, means for developing a beam of energy, deflection means for deflecting the beam of energy across the target screen, and means for modulating the beam of energy; the improvement comprising: first index means associated with said target screen for providing first index signals indicative of a first position of said beam on said target screen, and second index means associated with said target screen for providing second index signals indicative of a second position of said beam on said target screen, timing means for measuring the time taken by the beam of energy to traverse the path from said first position to said second position, and control means responsive to said timing means for controlling said deflection means.

18. A full-color line screen image display apparatus comprising a viewable screen having a repeating array of red, blue, and green color-producing lines which create a full color image; characterized by the features that



(1) the red line is not of greater width than the green line, and

(2) the blue line is of lesser width than one-half the sum of the width of the red line and the width of the green line, and is substantially more wide than one-third of the width of the green line.

4,225,881

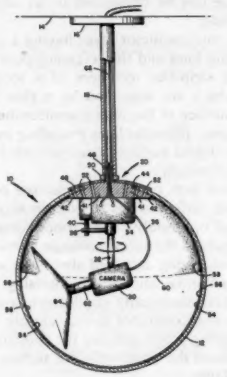
DISCRETE SURVEILLANCE SYSTEM AND METHOD FOR MAKING A COMPONENT THEREOF

Murray Tovi, Roslyn, N.Y., assignor to Murray Tovi Designs, Inc., Long Island, N.Y.

Continuation-in-part of Ser. No. 761,986, Jan. 24, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 963,742

Int. Cl.[2] H04N *7/18, 5/30*; G03G *5/04*

U.S. Cl. 358—108 **14 Claims**



1. A surveillance device comprising, in combination:

a spherical dome having an opening communicating with the interior of said dome;

a reflective metalizing coating of silver positioned on the interior surface of said dome;

a coating of SiO positioned on said silver coating;

a plastic film covering said SiO coating on the interior of said dome;

mounting means associating with said opening for supporting said dome;

a camera connected to said mounting means and having a lens positioned in the interior of said dome;

scanning means for turning said camera about a predetermined scan angle;

means for mounting said dome on a surface; and

a matte darkened coating positioned on portions of said dome defining an opening in said dome for said lens.

4,225,882

METHOD AND A DEVICE FOR ANALYZING A PYROELECTRIC TARGET

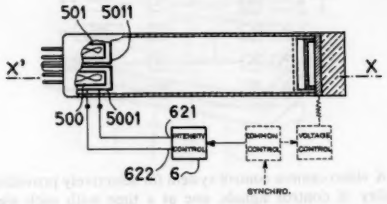
Guy Moiroud, and Serge Veron, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 21, 1977, Ser. No. 853,175

Claims priority, application France, Nov. 26, 1976, 76 35750

Int. Cl.[2] H04N *5/33;* **H01J** *31/49;* **H04N** *5/34*

U.S. Cl. 358—113 **6 Claims**



1. A method for analyzing a pyroelectric target comprising the steps of

heating up the pyroelectric target by an incident radiation to generate electrical charges;

storing of the signals recorded on the target said heating up step, by

neutralising said electrical charges,

cooling said pyroelectric target,

reading out said signals from said pyroelectric target,

scanning of the target by an electron beam causing both neutralising and reading out of said signals, respectively.

4,225,883

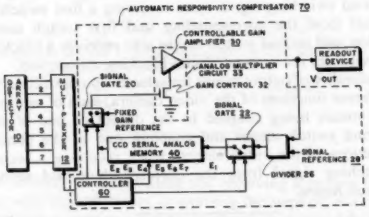
AUTOMATIC RESPONSIVITY COMPENSATOR IN AN IR IMAGING SYSTEM

Peter W. Van Atta, Woodbridge, and Max L. Harwell, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 11, 1979, Ser. No. 47,430

Int. Cl.[3] H04N *7/18*

U.S. Cl. 358—113 **7 Claims**



1. In an IR imaging system having a detector array and a CCD multiplexer in a cryogenic dewar wherein said CCD multiplexer operates with fixed gain input signals from a plurality of linear detector channels of said detector array and wherein the video output signals from said multiplexer are equalized by an automatic responsivity compensator outside said cryogenic dewar which provides automatic gain adjustment for each of the multiplexed fixed gain input signals from each of said plurality of linear detector channels, wherein said automatic responsivity compensator is comprised of:

a gain amplifier for receiving and amplifying the serially multiplexed video output signals from each linear detector channel;

a divider having first and second inputs thereto in which said first input has a signal reference applied thereto and said second input has the active signal from the gain amplifier applied thereto wherein said signal reference is normalized to the desired output signal level of said gain amplifier for nominal responsivity of said detector array when looking at a fixed temperature source in the field of view of the detectors and provides a voltage reference for automatic gain adjustment of said gain amplifier for each of said plurality of linear detector channels to normalize and equalize the responsivity of the detectors whereby the constant signal reference is divided by the variable active signal resulting with a plurality of established correction signals for each of said plurality of linear detector channels being generated at the output of said divider in which said correction signals are close to unity and on the opposite side of unity from what the active signal is from the signal reference;

a gating means;

a CCD serial analog memory having a complete series of said plurality of established correction signals representing one frame of said plurality of linear detector channels serially gated into and stored therein by said gating means, said gating means isolating the output of said CCD serial analog memory while said complete series of the plurality of established correction signals are stored therein and isolating the input of said CCD serial analog memory from the output of said divider after said plurality of establish correction signals are stored therein; and

a controller that synchronously clocks the operation of said CCD multiplexer and said CCD serial analog memory along with said gating means to multiplex each of the detector channels of said video output signals from said plurality of linear detector channels simultaneously with the gating of each of the corresponding plurality of established correction signals out of said CCD serial analog memory to said gain amplifier to automatically regulate the gain and output voltage of said gain amplifier in accordance with each of said plurality of established correction signals for each of identical detector channels of said plurality of linear detector channels whereby said plurality of established correction signals are continuously reentered at the input of said serial analog memory and are recirculated therethrough to simultaneously appear at the output thereof to continuously automatically regulate the gain and output voltage of said gain amplifier.

4,225,884

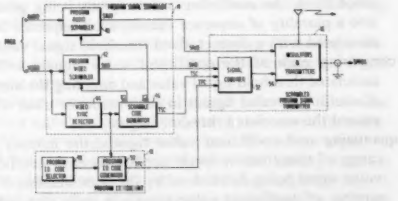
METHOD AND SYSTEM FOR SUBSCRIPTION TELEVISION BILLING AND ACCESS

Robert S. Block, Marina Del Ray, Calif., and John R. Martin, Milwaukee, Wis., assignors to Telease, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 768,404, Feb. 14, 1977, Pat. No. 4,163,254. This application Jun. 30, 1978, Ser. No. 920,846

Int. Cl.[2] H04N *7/16*

U.S. Cl. 358—122 **14 Claims**



1. In a pay television system in which television program

signals are transmitted to subscribers in a scrambled form and the subscribers are billed for programs viewed, a program selection system comprising:

means at a location remote from the subscriber location for inserting into the scrambled program signal a signal identifying the program signal as one of a plurality of categories of programs for transmission thereof with the program signal;

means at the subscriber location for receiving the scrambled program signal, including the category identifying signal;

means at the subscriber location for locally generating a signal identifying at least one category of programs which will be accepted for viewing;

means at the subscriber location for unscrambling a received scrambled program signal;

means at the subscriber location for comparing a received category identifying signal with a locally generated category acceptance signal; and

means for inhibiting operation of said unscrambling means when the received category signal does not correspond with the locally generated signal.

4,225,885

METHOD AND APPARATUS FOR ADAPTIVE TRANSFORM CODING OF PICTURE SIGNALS

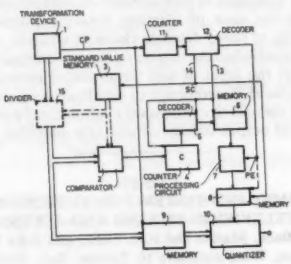
Peter Lux, and Jürgen Petzold, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,382

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1977, 2706080

Int. Cl.[2] G06K *9/12*

U.S. Cl. 340—146.3 AG **5 Claims**



1. A method for adaptive transform coding of picture signals comprising the steps of:

transforming the picture signals in accordance with a unitary orthogonal transform to obtain a plurality of coefficient value signals representative of picture energy in a series of subpictures, the coefficient value signals being grouped into a plurality of sequence classes, each sequence being associated with a distinct, fixed threshold signal value;

comparing each of the coefficient value signals with its associated threshold signal value and counting the number of coefficient value signals in each sequence class which exceed the associated threshold signal,

quantizing said coefficient value signals, the number and range of quantization levels applied to each coefficient value signal being determined by the combinations of the number of coefficient value signals in each class which exceed the associated threshold signal value.

4,225,886

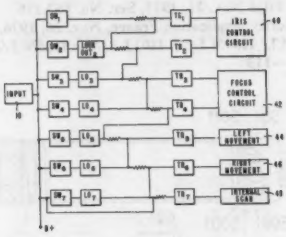
VIDEO CAMERA CONTROL SYSTEM

William V. Smith, Memphis, Tenn., assignor to Lectrolarm Custom Systems, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 851,812, Nov. 16, 1977, Pat. No. 4,152,696. This application Mar. 21, 1979, Ser. No. 22,505

Int. Cl.[2] H04N *5/30*

U.S. Cl. 358—210 **15 Claims**



1. A video camera control system for selectively providing a plurality of control signals, one at a time with each signal serving to enable a separate control function of a video camera capable of a plurality of different functions, said system comprising:

(a) input means for providing a plurality of different level voltage signals;

(b) a plurality of first switch means coupled to receive the voltage signals from said input means, each of said first switch means being activated when the voltage signal is above a corresponding predetermined level with the predetermined level for each of said first switch means being different and each of said first switch means providing at its respective output a first switching signal upon being activated;

(c) a plurality of blocking means, each being coupled to the output of a respective one of said first switch means except for said first switch means corresponding to the lowest level input signal, and each of said blocking means providing a blocking signal upon receiving a first switching signal from the corresponding said first switch means;

(d) a plurality of second switch means, each being actuated by a corresponding one of said first switch means and said blocking means associated with said first switch means that is to be activated by the next higher level input signal, each of said second switch means providing at its output a second switching signal upon receiving a first switching signal from the corresponding said first switch means unless said second switch means also receives a blocking signal from the associated said blocking means; and,

(e) a plurality of output means for selectively controlling the different functions of the video camera, each of said output means being coupled to the output of one of said second switch means and enabling one of the control functions of the video camera when receiving a second switching signal from the corresponding said second switch means.

4,225,887

OPTICAL IMAGE ACOUSTO-ELECTRIC READING DEVICE

Herve Gautier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 22, 1978, Ser. No. 972,521

Claims priority, application France, Dec. 26, 1977, 77 39200

Int. Cl.[2] H04N *5/30*

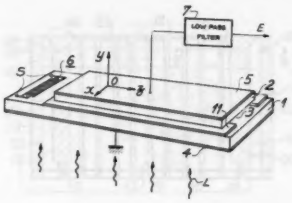
U.S. Cl. 358—213 **9 Claims**

1. A two dimensional optical image acousto-electric reading device comprising:

a piezoelectric substrate having a two dimensional propaga-

tion surface on which elastic waves are able to be propagated along a direction OZ and a non-parallel direction OX,

a semi-conductor substrate placed opposite the piezoelectric substrate propagation surface but not in contact with it, and having a substantially similar two dimensional shape on the propagation surface, a two dimensional network of photosensitive memory elements on the substrate face opposite the propagation surface, said two dimensional optical image being projected on this network and causing a discharge of said memory elements which is a function at each point of the luminous intensity received from said image,



means for emitting at least one train of pulse-shaped, high frequency elastic waves on said propagation surface, in the OZ direction and second means for emitting a second train of pulse shaped high frequency elastic waves on said propagation surface in the direction OX, said wave trains recharging said memory elements when they propagates along said direction OZ and OX and intersect by supplying the corresponding recharging current to the memory element at the location of intersection,

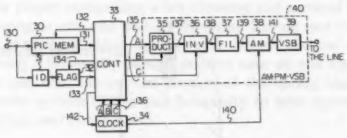
means for picking said current to form a video output signal corresponding to reading of said image.

4,225,888

HIGH EFFICIENCY FACSIMILE TRANSMISSION SYSTEM

Shoichiro Takayama; Norio Nakagata, and Takeharu Katsuno, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 924,075
Claims priority, application Japan, Dec. 20, 1977, 52/152335
Int. Cl.[2] H04N *1/17, 7/12*
U.S. Cl. 358—288 **6 Claims**



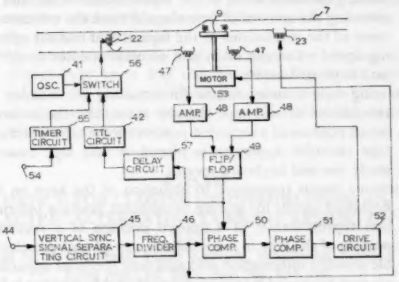
1. A method for transmitting and receiving a picture information with high efficiency comprising the steps of, in a transmission station, storing a picture information obtained through a scanning operation in a picture signal memory, dividing each scanning line into a plurality of blocks each of which has m number of picture cells, identifying if each of block has a black cell or not and giving the binary zero flag to a block with a black cell and the binary one flag to a block with no black cell, storing the flags thus identified in a flag memory, providing a base band signal with positive and negative first amplitude levels and the zero level corresponding to each picture cell for the block to those blocks with a black cell, providing another base band signal as a skipping flag with positive and negative second amplitude levels to those blocks with no black cell said second amplitude levels being twice said first amplitude levels, said skipping flag having the duration of n number of picture cells where n is smaller than said m, providing a line synchronization signal with the positive and negative second amplitude levels, the composition of the line synchronization signal being different from that of said skipping flag, and modulating said base band signals and the line synchronization signal to provide an AM-PM-VSB modulated signal, and transmitting the AM-PM-VSB modulated signal to a communication line, and in a reception station, demodulating the AM-PM-VSB signal received from the communication line to provide a base band signal, differentiating a skipping flag from a picture signal when the level of the demodulated signal is higher than a second amplitude level threshold, and the high level continues longer than the predetermined duration, and printing only those blocks with black cell on a printing paper.

4,225,889

MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING MEANS FOR RECORDING A CUE-SIGNAL

Toshiomi Yabu, Kyoto; Tatsuo Wada, Osaka; Kouichi Yamada, Higashiosaka, and Tadashi Yoshino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 29, 1978, Ser. No. 964,684
Claims priority, application Japan, Dec. 2, 1977, 52-145506
Int. Cl.[2] G11B *5/02, 27/30*
U.S. Cl. 360—14 **6 Claims**



1. A magnetic tape recording and reproducing apparatus comprising:

a rotary video head assembly;

a stationary full erase head;

a tape transport means for transporting a magnetic tape past said rotary video head and said full erase head;

an erasing signal source for generating erasing signals having a predetermined frequency;

a cue-signal source for generating cue-signals having a frequency lower than said predetermined frequency of said erasing signals; and

a switching means connected to said full erase head, said erasing signal source and said cue-signal source for selectively connecting said erasing signal or said cue-signal to said full erase head, whereby when said erasing signal is connected to said full erase head the magnetic tape is erased and when said cue-signal is connected to said full erase head a cue-signal is recorded on the magnetic tape.

4,225,890

MAGNETIC TAPE RECORDER HAVING A TAPE DRIVE CONTROLLER IMPLEMENTED WITH A DIGITAL PROCESSOR CHIP

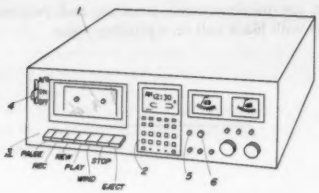
Takashi Takenaka, Higashihiroshima; Masaaki Maegawa, Tsuzuki, and Tosaku Nakanishi, Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 21, 1978, Ser. No. 935,329

Claims priority, application Japan, Aug. 26, 1977, 52-103081; Aug. 26, 1977, 52-103082; Aug. 26, 1977, 52-103083; Aug. 26, 1977, 52-103084; Aug. 26, 1977, 52-103087

Int. Cl.[2] G11B *15/18, 19/00*

U.S. Cl. 360—72.1 16 Claims



1. A tape recorder apparatus capable of measuring the instantaneous position of a recorded portion on a tape when operating in one of a plurality of operational modes, said recorder apparatus being capable of rotating said tape at a normal operating speed, comprising:

keyboard means for placing said tape recorder apparatus in one of said plurality of operational modes and for entering data corresponding to the selected operational mode into said tape recorder apparatus, said operational modes comprising a tape counter mode and a seconds counter mode, said tape recorder apparatus measuring the instantaneous position of a recorder portion on the tape by counting the number of revolutions of the tape with respect to an initial starting position when in the tape counter mode and by counting the amount of time elapsed since the commencement of the revolutions of the tape at said normal operating speed when placed in said seconds counter mode via said keyboard means;

running tape counter means for counting the number of revolutions of said tape thereby measuring the instantaneous position of a recorded portion on the tape when said tape recorder apparatus is placed in said tape counter mode via said keyboard means;

memory means responsive to actuation of the keys on the keyboard means for storing preselected position information representative of a desired position of a recorded portion of the tape in response to entry of said preselectable position information into said tape recorder apparatus via said keyboard means, said preselectable position information including digits representative of a preselectable number of revolutions of said tape required to achieve a desired position on tape and digits representative of a preselectable amount of elapsed time since the commencement of the revolution of said tape required to achieve a desired position on tape;

time counter means for counting the amount of elapsed time since the commencement of the revolutions of the tape at said normal operating speed thereby measuring the instantaneous position of said recorded portion on the tape when said tape recorder apparatus is placed in said seconds counter mode; and

decision logic means for determining if the output of the running tape counter means and the output of the memory means agree when in said tape counter mode, said decision logic means determining if the output of said time counter means and the output of said memory means agree when in said seconds counter mode thereby generating a decision logic output signal in response thereto, the output signal of the decision logic means being available to shift the operational state of the tape recorder apparatus.

4,225,891

FLY OFF PLATFORM FOR MAGNETIC TRANSDUCERS HAVING MEANS FOR REDUCING UNSTICK TIME

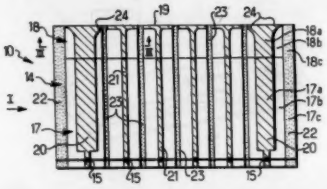
Michel Plotto, Paris, France, assignor to Compagnie Internationale pour l'Informatique, Paris, France

Filed Nov. 8, 1978, Ser. No. 958,839

Claims priority, application France, Nov. 15, 1977, 77 34346

Int. Cl.[2] G11B *5/60*

U.S. Cl. 360—103 4 Claims



1. In an improved fly-off transducer platform having at least one read/write transducer for a data carrier and a flight surface comprising a first surface which provides the platform with its lift when it is flying above the said data carrier and a second, bevelled surface which is situated at the front of said flight surface with reference to the direction of movement of the data carrier in relation to the platform, the improvement comprising a rim along the leading edge of the bevelled surface, said rim, transversely to the direction of movement, being greater at the front edge of said bevelled surface than at its rear for increasing lift when the said platform unsticks.

4,225,892

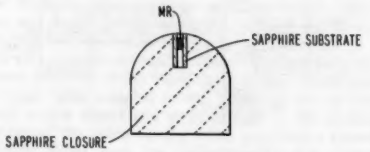
WEAR RESISTANT MAGNETORESTRICTIVE HEAD

Roger D. Bassett, Westminister, Colo.; Gerald A. Daughenbaugh; Davis S. Fields, Jr., both of Tucson, Ariz.; Wayne McCormick, Arvada, Colo.; Rhodes W. Polleys, Tucson, Ariz.; Ralph D. Silkensen, Tucson, Ariz., and Gerald Steving, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,321

Int. Cl.[3] G11B *5/30, 5/12, 5/22*

U.S. Cl. 360—113 4 Claims



1. In an MR sensing head wherein the MR film is deposited on a sapphire wafer substrate, and a sapphire wafer closure overlies the MR film to define a sensor element, and wherein the sensor element has a contact surface defined by two end surfaces of the substrate and closure piece with the MR element disposed between said wafers and recessed from said surface, the improvement which comprises,

said substrate being a single crystal sapphire having the MR element deposited onto the {0001} plane with the {1100} plane being oriented as the magnetic media contact surface thereof,

said closure being a single sapphire crystal having its {1120} plane facing the plane of the base on which the MR mate-

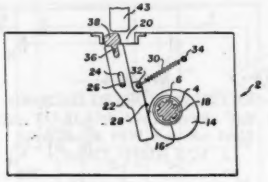
rial is depicted and with its {1100} plane being oriented as the magnetic media contact surface thereof.

4,225,893

CLEANER FOR A PLAYING HEAD OF A CASSETTE PLAYER

Guy J. Loiselle, 8648 Terrace Dr., Delta, British Columbia, Canada

Continuation-in-part of Ser. No. 811,813, Jun. 30, 1977, Pat. No. 4,149,206. This application Feb. 1, 1979, Ser. No. 8,626
Int. Cl.² G11B *5/41*
U.S. Cl. 360—128 **13 Claims**



1. A cleaner for a playing head of a cassette player having a sprocket drive and having a recess able to receive a cassette tape in a playing position, the cleaner comprising:

a hollow container dimensioned to be retainable within the recess;

a hollow post within the container, positioned to permit the sprocket drive of the player to enter the interior of the container;

a generally circular cam positioned on the post and rotatable thereon;

drive means on the cam to engage the sprocket drive of the cassette player;

an opening in one side of the container;

a lever pivotally located within the container to be reciprocable by the cam;

means at one end of the lever to receive cleaning means for the playing head of the cassette player, the cleaning means being able to project from the opening in the container to contact and clean the playing head when the cleaner is retained within the recess;

means for continuously engaging the lever and the cam comprising a generally circular peripheral groove on the cam and a pin on the lever for following the groove; and

means for cleaning a capstan and a pinch roller of the cassette player comprising a felt cleaning pad secured to the housing at one end and a leaf spring having one end secured to the housing near one side thereof, the leaf spring having a forwardly curved portion near an end opposite the one end, the curved portion of the spring biasing a middle portion of the pad forwardly to bear against the capstan and pinch roller.

4,225,894

MODE CHANGE-OVER MECHANISM FOR RECORDING AND/OR REPRODUCING APPARATUS

Takumi Fulukawa, Yamato; Hisashi Hanzawa, and Kunio Shimizu, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 20, 1978, Ser. No. 961,960
Claims priority, application Japan, Nov. 19, 1977, 52-139225
Int. Cl.² G11B *15/02, 19/02*
U.S. Cl. 360—137 **21 Claims**

1. A mode change-over mechanism for a recording and/or reproducing apparatus having a plurality of modes of operation comprising:

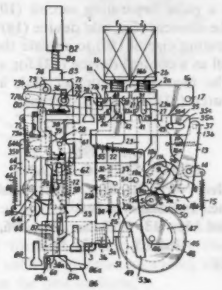
cam means operable each time a change in the operation mode of the apparatus is to be effected;

a slide member adapted to be longitudinally displaced;

spring means urging said slide member in one longitudinal direction to a starting arrested position;

means driven by said cam means for imparting a stroke to said slide member in the other longitudinal direction upon each operation of said cam means;

electro-magnetically operated means for selectively determining at least one additional arrested position of said slide member, each said arrested position corresponding to a respective mode of operation of the apparatus and at which the return movement of said slide member under the urging of said spring means is selectively arrested following the imparting of said stroke to the slide member;



a plurality of mode-establishing members adapted to be individually displaced from inactive to active positions for establishing respective modes of operation of the apparatus;

a mode change-over lever which is angularly positionable for selective engagement with said mode-establishing members in dependence on the position at which said slide member is selectively arrested following said imparting of the stroke thereto; and

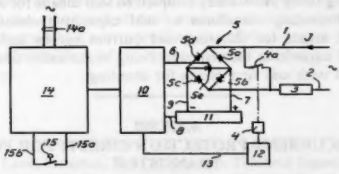
drive means operable by said cam means for driving said change-over lever and thereby displacing to its active position the mode-establishing member with which said change-over lever is engaged so as to establish the respective mode of operation.

4,225,895

DEVICE FOR CLOSING OR INTERRUPTING AN ELECTRIC ALTERNATING CURRENT ARISING ON A LINE

Bengt N. V. Hjertman, 12235 Enskede, Stockholm, Sweden

Filed Nov. 28, 1977, Ser. No. 855,214
Int. Cl.² H02H *7/22*
U.S. Cl. 361—8 **3 Claims**



1. A device for the closing or interrupting of an alternating current (I) arising on a line (1,2) at its zero passage, in which the current (I) is utilized for the supply of energy to a load (3), which closing or interrupting of the current (I) is provided by the activation of an electronic switching means (5) characterized in that the electronic switching means (5) is switched

parallel to a mechanical contact (4*a*), a separate current source (11) connected to the switching means (5);

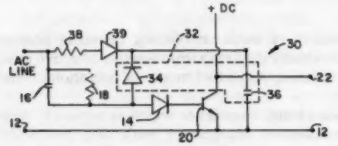
the mechanical contact (4*a*) having a closed position to short circuit the switching means (5), a semiconductor element (5*e*) connected to the switching means (5) being electrically actuated by the current source (11) when the contact (4*a*) is in the closed position, said switching means (5) arranged to bring about a switching on or off of current to the load (3) at the zero passage (t_2, t_7) of the current, the mechanical contact (4*a*) being in the closed position during the switch-on time of the load, at the beginning (t_3) of a short persistance time (t_2-t_3), after the switching on of electronic switching means (t_2), and for a short persistance time (t_6-t_7) before the interruption (t_8) of the electronic switching means, an electronic control device (14) connected to a pulse separating circuit (10) which in turn controls the element (5*e*), said device (14) activated by the pulse separating circuit (10) to actuate the current source (11) as well as a control device (12) for a relay (4) which operates the mechanical contact (4*a*), and wherein the current source (11) is a direct current.

4,225,896

CREST FIRING MEANS

Louis M. Sandler, North Reading, Mass., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 13, 1978, Ser. No. 886,153
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—56 **3 Claims**



1. In a means for detecting a half-cycle voltage crest of an alternating voltage waveform of the type including at least one capacitive element having a discharge time constant which is substantially longer than a period of said alternating voltage waveform and means responsive to said alternating voltage waveform and to the discharge rate of said capacitive element for applying said alternating voltage waveform to said capacitive element at substantially said half-cycle voltage crest of said alternating voltage waveform whereby a signal is produced indicating said half-cycle voltage crest, the improvement comprising: means for protecting said means for applying said alternating voltage waveform to said capacitive element from current surges associated with changes in voltage amplitudes of said alternating voltage waveform, said means for protecting including, first means for shunting said current surges away from said means for applying, said first means for shunting being electrically coupled to said means for applying said alternating waveform to said capacitive element, and second means for shunting said current surges including a second capacitive element and being electrically coupled in parallel with said first means for shunting.

4,225,897

OVERCURRENT PROTECTION CIRCUIT FOR POWER TRANSISTOR

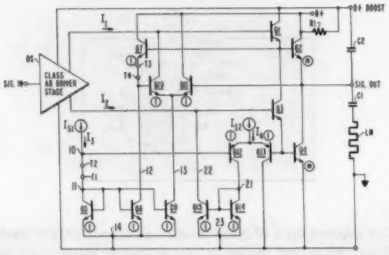
Leonard A. Kaplan, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,499
Int. Cl.² H02H *7/20*
U.S. Cl. 361—87 **5 Claims**

1. In an electronic circuit with a protected transistor having base and emitter electrodes with an emitter-base junction therebetween, having a collector electrode, and being connected for receiving a base drive current and an emitter-to-collector potential, an overcurrent protection circuit for said protected transistor comprising:

a reference transistor having base and emitter electrodes with an emitter-base junction therebetween, having a collector electrode, and having said protected transistor thermally coupled therewith for tracking the operating temperature of said reference transistor to that of said protected transistor;

means connecting said reference transistor for conducting a predetermined level of current through a collector-to-emitter path thereof;



differential comparator means connected to compare the emitter-to-base potential of said protected transistor to that of said reference transistor for providing an indication of an overcurrent condition with regard to said protected transistor whenever its emitter-to-base potential increases by specified amount in comparison to the emitter-to-base potential of said reference transistor; and

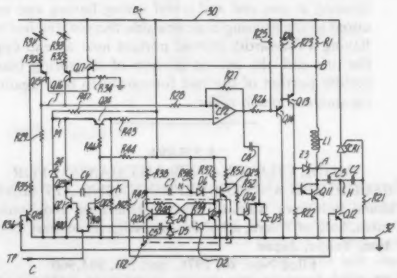
means responsive to said indication of an overcurrent condition for limiting further increase in the base drive current available to said protected transistor.

4,225,898

INDUCTIVE DRIVER CIRCUIT EFFECTING SLOW AND FAST CURRENT DECAY

Robert E. Weber, Newport News, and Patrick D. Harper, Seaford, both of Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,443
Int. Cl.² H03K *1/14*
U.S. Cl. 361—154 **10 Claims**



1. A method for controlling the current supplied to an inductive load in response to the presence and absence of a command signal comprising the steps of

a. enabling by the presence of said command signal a current supply path to said inductive load and a first current decay path from said inductive load;

b. sensing the current being provided to said inductive load;

c. providing a load signal indicating at least first and second current levels through said inductive load;

d. alternately completing said current supply path to allow said load current to increase to where said load signal indicates said first current level and interrupting said current supply path to allow said load current to decay at a first rate through said first decay path to where said load current signal indicates said second load current level; and

e. completing a second current decay path when said command signal is absent to allow said load current to decay at a second rate which is faster than said first decay rate.

4,225,899

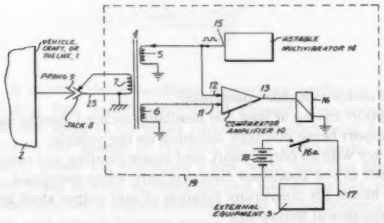
GROUND DETECTING DEVICE

George Sotiriou, 212-11 47th Ave., Bayside, N.Y. 11361

Filed Jan. 8, 1979, Ser. No. 1,438

Int. Cl.[3] H02H *3/14*

U.S. Cl. 361—188 4 Claims



1. A ground detecting device for a vehicle, craft, or the like, having a storage tank mounted on the vehicle, or the like, and equipment for selectively controlling the pumping of fluid into and out of the storage tank, said ground detecting device comprising

a transformer having first, second and third windings, said third winding being electrically connected to ground;

a jack electrically connected in shunt with said third winding;

a prong electrically connected to the vehicle, craft, or the like, and cooperating with said jack, when inserted therein, to short-circuit said third winding to ground, said short-circuit having a short-circuit impedance resulting in a voltage differential at said second winding;

a comparator amplifier having a sensing input electrically connected to said second winding and a reference input, said comparator amplifier having an output;

an astable multivibrator having an output electrically connected to the reference input of said comparator amplifier and to said first winding and supplying a reference input signal thereto; said

a relay having a relay energizing winding electrically connected to the output of said comparator amplifier and controlling the equipment for selectively controlling the pumping of fluid into and out of said storage tank whereby when said vehicle, craft, or the like, is short-circuited, so that static electricity is dissipated from said vehicle, craft, or the like, to ground, the short-circuit is reflected at the first winding of the transformer and produces a voltage drop between the reference input signal and the sensing input of said comparator amplifier, said voltage drop causing saturation of said amplifier resulting in energization of the relay energizing winding and operation of said equipment.

4,225,900

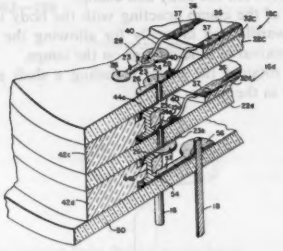
INTEGRATED CIRCUIT DEVICE PACKAGE INTERCONNECT MEANS

Joseph A. Ciccio, Winchester; Rudolf E. Thun, Carlisle, and Harry J. Fardy, Chelmsford, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 25, 1978, Ser. No. 954,513

Int. Cl.[3] H05K *1/08*

U.S. Cl. 361—395 5 Claims



1. An electrical interconnect system comprising:

(a) a pair of substrates, each one thereof having a pattern of conductors formed on first surfaces thereof with end portions of such conductors providing a plurality of contact pads on the first surfaces;

(b) a plurality of integrated circuit chips bonded to the conductors formed on the first surfaces of the pair of substrates;

(c) a pair of dielectric support structures each one having a corresponding plurality of contact pads disposed on first surfaces of such support structures, a first one of the pair of support structures having a corresponding plurality of contact pads formed on a second, opposite, surface of such structure, each one of the contact pads on the first surface of such first one of the dielectric support structures being electrically connected to a corresponding one of the contact pads on the second surface thereof, each one of the pair of substrates having a second surface bonded to the first surface of a corresponding one of the dielectric support structures;

(d) a plurality of connectors, each one thereof electrically connected between one of the plurality of contact pads formed on the first surface of the pair of dielectric support structures and a corresponding one of the contact pads formed on the one of the pair of substrates bonded to the first surface of such dielectric support structure; and

(e) a dielectric spacer having a plurality of electrical contact pins passing therethrough, such spacer being disposed between the pair of dielectric support structures, one end of each contact pin being electrically connected to a corresponding one of the contact pads formed on the second surface of the first one of the dielectric support structures and the other end of such contact pin being electrically connected to a corresponding one of the contact pads on the first surface of the second one of the support structures.

4,225,901

LAMPCHANGER FOR A LIGHT

Dan G. Luce, Houston, Tex., assignor to Tideland Signal Corporation, Houston, Tex.

Filed Jul. 31, 1978, Ser. No. 929,397

Int. Cl.[3] F21V *19/04, 21/00;* H01H *1/60;* H01R *13/62*

U.S. Cl. 362—20 11 Claims

8. A lampchanger for a light comprising,

a rotatable turret for holding a plurality of lamps which have at least one locking pin on the lamp bases, said turret including,

a turret body,

a clamp coacting with the body for holding and locking the lamps between clamp and the body,

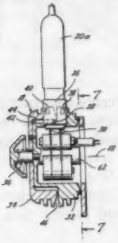
said body and clamp having coacting openings for receiving the bases of said lamps,

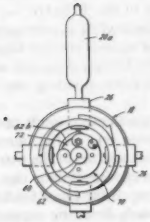
said body and clamp each having a holding shoulder for engaging the locking pins of said lamps therebetween,

spring means yieldably urging said clamp and body together whereby lamps may be inserted and removed from between the body and clamp,

the face of the clamp coacting with the body is tapered downwardly and inwardly for allowing the insertion and removal of holding pins on the lamps,

means for rotating the turret including a shaft extending coaxially in the turret,





at least one fixed electrical contact within the turret for contacting a lamp in the operating position, said contact including a spiral electrical conducting spring spiraling outwardly from the axis of the turret with its most outward extent towards the lamps being positioned to engage the lamp in the operating position, said spring being a flat spring having a free portion of more than 45 degrees with the free end located adjacent the operation position, and the spring extends outwardly sufficiently to make contact with a rotating lamp in advance of the lamp operating position,

a C-shaped insulator about the shaft and support said contact, said insulator including a recess for allowing the free end of the contact to be compressed into said recess upon contact with a lamp, said gap in the C-shaped insulator positioned in advance of the lamp operating position at the location where a lamp first engages the contact.

4,225,902

HEADLIGHT BEAM CONTROL SYSTEM FOR MOTOR VEHICLES

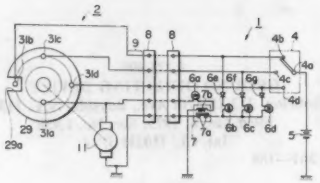
Masao Ishikawa, No. 3-5-20, Nakahara Isogo-ku, Yokohama, and Orii Shinichi, No. 4-6-20 Fujigaya, Kugenuma, Fujisawa, both of Japan

Filed Sep. 21, 1977, Ser. No. 835,231

Claims priority, application Japan, Sep. 24, 1976, 51/129137

Int. Cl.[2] B60Q 1/06

U.S. Cl. 362—40 **2 Claims**



1. A motor vehichle comprising:

a support having at least one headlamp secured thereto, said support being pivotally mounted on the vehicle;

a motor with an output shaft, said motor rotating said output shaft in one rotational direction only when energized;

cam means for converting rotation of said output shaft into a reciprocal movement;

linkage means for transmitting the reciprocal movement to said support to pivot said support; and

an electric circuit for energizing said motor, said electric circuit comprising:

a first group of electrical contacts;

a contact disc electrically connected in series with said motor;

a second group of electrical contacts electrically connected in series with said first group of electrical contacts, respectively, said second group of electrical contacts being arranged to be in slidable engagement with said contact disc,

said contact disc being operatively connected to said output shaft to be rotated thereby, said contact disc having means for insulating said second group of electrical contacts one after another from said contact disc as said contact disc rotates;

manually operable means for selectively connecting one of said first group of electrical contacts to a source of electricity; said cam means comprising:

a rotary member, to which said contact disc is concentrically connected, operatively connected to said output shaft of said motor to be rotated thereby in one rotational direction, said rotary member having an offset pin secured thereto;

a reciprocably movable cam plate with respect to the axis of rotation of said rotary member, said cam plate having a laterally extending groove, with respect to the direction of the reciprocal movement of said cam plate, for slidably receiving said offset pin and a second groove; and

a cam follower pin operatively connected to said linkage means, said cam follower pin being slidably received in said second groove, said second groove being configured such that as said cam plate moves in one direction said cam follower pin is moved inwardly of said cam plate.

4,225,903

MOTOR VEHICLE HEADLIGHT FOR LOW AND HIGH BEAMS

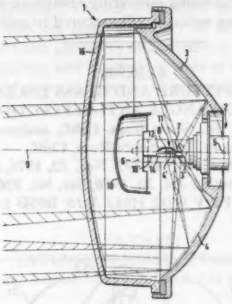
Konrad Buchleitner, Neufahrn, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed May 10, 1978, Ser. No. 904,595

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720956

Int. Cl.[2] B60Q *1/00;* F21M *3/14;* F21V *7/00*

U.S. Cl. 362—61 12 Claims



1. A motor vehicle headlight, comprising a reflector means including two partial paraboloids arranged one above the other, the focus of the upper partial paraboloid being located closer to the apeces of the two partial paraboloids, a first filament means for producing a low beam, said first filament means being located between the two foci of the two partial paraboloids, and a second filament means for producing a high beam, said second filament means being located substantially within the focus of the lower partial paraboloid, characterized by a covering means for shielding the light emitted by the second filament means in the direction toward the upper partial paraboloid whereby near-field illumination by the high beam is avoided.

4,225,904

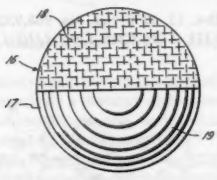
FOG FILTER FOR HEADLIGHTS

Bill Linder, 822 Zola, Houston, Tex. 77076

Filed May 18, 1978, Ser. No. 907,129

Int. Cl.[2] B60Q *1/00;* F21M *3/14;* F21V *21/00;* G02B *7/00*

U.S. Cl. 362—61 6 Claims



1. The combination with automobile headlights of the sealed-beam type, having a low beam filament and a high beam filament, of a removable light filter having at least a portion of amber or yellow color, said filter being positioned so that the colored portion covers only the high beam filament portion, and said filter having a continuous peripheral rim of magnetic material cooperable with the rim of the headlight on which it is fitted to provide a tight continuous seal, said combination being effective to project a beam of white light on low beam setting and a beam of amber of yellow light on high beam setting.

4,225,905

FLUORESCENT LIGHT FIXTURE

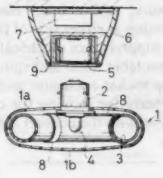
Hideo Moriyama, and Masayuki Katoogi, both of Tokyo, Japan, assignors to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1978, Ser. No. 902,421

Claims priority, application Japan, May 9, 1977, 52-53569; May 28, 1977, 52-62684; Jun. 27, 1977, 52-76338; Mar. 1, 1978, 53-23166; Mar. 1, 1978, 53-23167

Int. Cl.[2] F21S *5/00*

U.S. Cl. 362—216 18 Claims



1. A fluorescent light fixture comprising:

a base for insertion into an incandescent lamp socket having electricity supplied thereto;

a cover assembly attached to said base including

a metal plate member for radiating heat from said fixture,

a first cover member attached to said metal plate member, and

a second cover member detachably connected to said first cover member, said metal plate and first and second cover members defining a sealed spaced within said cover assembly, a portion of at least one of said cover members being composed of a light transmitting material;

a hot cathode low pressure mercury vapor fluorescent discharge lamp provided with electrical connecting means;

a support member attached to said metal plate member for removably supporting said fluorescent discharge lamp within the space defined by said cover assembly; and

electric circuit means including lighting auxiliary means for coupling the base attached to said cover assembly to the fluorescent discharge lamp connecting means.

4,225,906

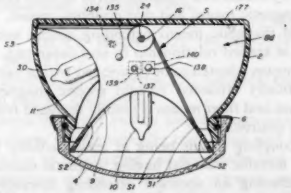
LUMINAIRE APPARATUS WITH MULTIPLE LIGHT SOURCES AND METHODS OF OPERATING SAME

John E. Gulliksen, Shrewsbury, and Roy A. Guimond, Holden, both of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Mar. 16, 1978, Ser. No. 886,783

Int. Cl.[3] F21V *19/04*

U.S. Cl. 362—254 13 Claims



1. Luminaire apparatus including a housing formed at a front side thereof with a reflector chamber having a reflector element mounted therein, a central section of the reflector element being removed to provide spaced apart edges which define an opening having a central axis coinciding with the central axis of the housing, said housing including a rearwardly disposed portion constructed with a lamp socket enclosure,

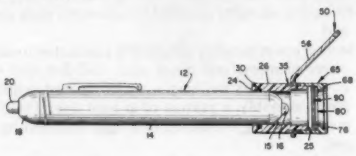
said lamp socket enclosure being formed at one side thereof with guide surface means, a multiple lamp socket body mounted in the lamp socket enclosure for movement on said guide surface means, the multiple lamp socket body presenting a plurality of spaced apart lamp sockets, respective lamps and arcuate reflector portions occurring at either side of the lamps, said arcuate reflector portions being complementary to the said reflector element, said lamp socket body having electrical contact buttons extending outwardly from opposite sides thereof and being electrically connected to respective sockets, a plurality of inwardly extending electrical contact elements supported in the housing between the reflector opening and the lamp socket enclosure, said contact elements occurring in spaced apart relationship at either side of the central axis of the housing, means for supplying an electrical current to the contact elements, a retractable knob and spindle means rotatably mounted in the lamp socket enclosure and displaceably keyed to the lamp socket body for moving the contact buttons into and out of engagement with the contact elements to selectively energize said lamps.

4,225,907

FLASHLIGHT MAGNIFIER ATTACHMENT

John B. Erdell, 50 Morningside Dr., New York, N.Y. 10025

Filed Dec. 26, 1978, Ser. No. 972,989
Int. Cl.³ F21M *3/14*
U.S. Cl. 362—255 **10 Claims**



1. An assembly adapted for attachment to a penlight body, comprising:

A. housing means formed with a rear end and a front end in longitudinally spaced relationship to each other and an axially extending aperture extending inwardly from said rear end, said aperture adapted to receive the bulbed end of said penlight body in seated telescopic relation thereto,

B. first magnetic means extending circumferentially on said housing means in spaced relationship to said front end and terminating in a free end thereof,

C. shoulder means disposed intermediate said first magnetic means and said front end,

D. viewing means adapted to be mounted on said shoulder means,

E. coupling means having an inner end and a spaced apart outer end with an axially directed bore extending inwardly of said inner end for securing said viewing means in removable fixed relationship to said first magnetic means by means of a magnetic force formed between said first magnetic means and said coupling means,

F. second magnetic means extending within said viewing means in spaced relationship to said outer end,

G. filter means adapted to be positioned within said bore and magnetically attracted to said second magnetic means such that said filter means is readily replaced from time to time as desired,

H. said coupling means being at least partially fabricated from a metallic material having magnetic characteristics, and including an aperture extending inwardly of said outer end and connected to said axially directed bore so as to permit the light from the bulbed end of said penlight to pass through said filter means such that said light may be directed at the object being viewed,

I. said viewing means being sandwiched intermediate said free end of said first magnetic means and said inner end of said coupling means,

J. said filter means includes a portion thereof fabricated from a metallic material having magnetic characteristics,

K. said second magnetic means extending circumferentially to said filter means for removably retaining said filter means in position,

L. alignment means to properly position said viewing means relative to said housing means, and

M. said viewing means including:

(1) a base having an opening therethrough, with said opening adapted to extend in telescopic relationship to said shoulder means,

(2) a flange extending outwardly relative to said base, and

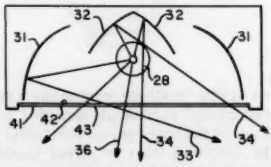
(3) magnifying means fixedly secured to said flange.

4,225,908

LIGHTING FIXTURE AND GLASS ENCLOSURE HAVING HIGH ANGLE ANTI-REFLECTION FILM

Edward A. Small, Jr., Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 744,197, Nov. 22, 1976, abandoned.
This application Jul. 20, 1978, Ser. No. 926,563
Int. Cl.² F21V *9/00;* **H01J** *5/16;* **B05D** *3/04*
U.S. Cl. 362—293 **1 Claim**



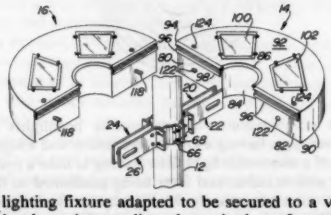
1. In a lighting fixture, a housing having an open side, a lamp mounted in said housing and producing light rays passing through the open side, a glass enclosure carried by said housing and enclosing the open side and having first and second surfaces, at least one of said surfaces being formed of an anti-reflection film produced by a chemical etch/leach process which is porous and skeletonized and has a high silica content said film having a tansmittance of better than approximately 98% for light incident and at an angle of approximately 60°; for the wave band of approximately 400 to 700 nanometers.

4,225,909

LIGHTING FIXTURE

Charles F. Scholz, Cincinnati, Ohio, and Robert Reibling, Fort Thomas, Ky., assignors to Whiteway Manufacturing Co., Cincinnati, Ohio

Filed Dec. 13, 1978, Ser. No. 968,932
Int. Cl.² F21L *7/00;* **F21S** *1/06, 1/10, 1/12*
U.S. Cl. 362—367 **14 Claims**



1. A lighting fixture adapted to be secured to a vertically disposed column intermediate the ends thereof comprising a housing divided into at least two sections, each housing section having an inner periphery and an outer periphery, the inner periphery on each housing section having a recess for receiving there within a portion of the periphery of a generally vertically disposed column or pole, each housing section hav-

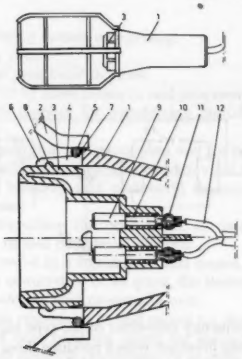
ing there within at least one source of illumination, each housing section having a top wall with a transparent portion through which illumination may be projected generally upwardly from its associated light source, each transparent portion being removably supported by said top wall to facilitate relamping of its associated light source without interfering with the mounting of the housing section on the column or pole, coupling means joining said sections together at juxtaposed walls on said section, said juxtaposed wall and said coupling means being disposed between the inner and outer peripheries of said sections, and means for securing said sections to a generally vertically disposed column or pole in a manner so that the inner periphery of the housing sections embrace the outer periphery of a column or pole, said securing means supporting said housing sections at a location between the inner and outer peripheries of said sections.

4,225,910

EXTENSION LAMP APPARATUS

Daniel Conte, Avenue Marcel Pagnol, Aix en Provence, France (13100)

Filed Jan. 16, 1979, Ser. No. 3,870
Claims priority, application France, Jan. 19, 1978, 78 02444
Int. Cl.³ F21V *17/06, 15/02*
U.S. Cl. 362—376 **8 Claims**



1. A non-disassemblable extension lamp apparatus comprising:

(a) a protective grill having an essentially undeformable base and comprising a plurality of downwardly extending grill sections and a rigid ring, said grill sections connected to and extending beyond said ring;

(b) a handle comprising a resiliently deformable upper section, said handle extending generally outwardly from its lower section towards a continuous outer groove which is formed in said upper section, said upper section then extending inwardly from said outer groove in a direction generally opposite to the lower section and having an inner groove; and

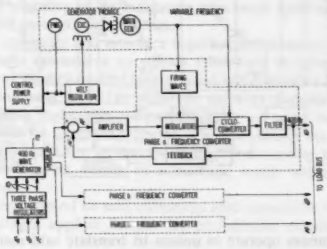
(c) a resilient bulb socket having a protruding rib; whereby said ring is fitted into said outer groove and over the upper section of said handle and said socket is force-fitted within the upper section of said handle thereby locking said rib in said inner groove and locking said ring of said protective grill in place and preventing removal of said grill from said handle.

4,225,911

APPARATUS AND METHOD FOR REDUCING OVERVOLTAGE TRANSIENTS ON THE OUTPUTS OF A VSCF SYSTEM

Harold G. Carlson, Apalackin, N.Y., assignor to General Electric Company, Wilmington, Mass.

Filed Nov. 15, 1978, Ser. No. 960,956
Int. Cl.³ H02M *5/00*
U.S. Cl. 363—50 **13 Claims**



1. A cycloconverter of the type having a source of multiphase electric power, a plurality of cycloconverter power source means connected to said multiphase electric power, each said cycloconverter power source means responsive to a gating signal for providing one of a plurality of alternating current power signals of a preselected frequency, first means responsive to each of said alternating current power signals for providing a plurality of reference signals of said preselected frequency having voltage amplitudes controlled in accordance with voltage levels of said alternating current power signals, a plurality of gating signal means, each of said gating signal means having an input responsive to one of said reference signals for providing said gating signal to one of said cycloconverter power source means, the improvement comprising:

second means responsive to the current levels of said alternating current power signals for reducing said voltage amplitudes of said reference signals to a preselected lower level within a cycle of said alternating current power signals after a load reduction condition or a no-load condition with respect to said alternating current power signals occurs.

4,225,912

CONTROL FOR AN AUXILIARY COMMUTATION CIRCUIT

Gordon J. Messer, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,543
Int. Cl.³ H02H *7/122;* H02M *7/515*
U.S. Cl. 363—57 **5 Claims**

1. An inverter for converting DC electrical energy into AC electrical energy, comprising:

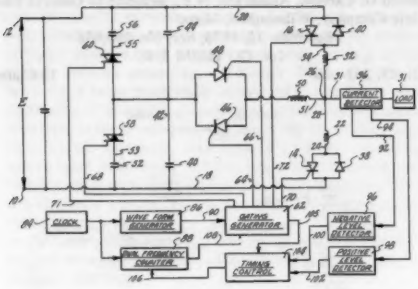
main semiconductor switch means responsive to a control waveform for periodically translating said switch means between its conducting and nonconducting states;

commutation means including a primary portion and an auxiliary portion, each of which is controlled by a commutation switch means;

generator means for creating a plurality of control waveforms to actuate said main semiconductor switch means and said commutation switch means; and

control means for providing control signals to said commutation means and, in response to an overcurrent condition,

for modifing said control waveform so that said primary portion and said auxiliary portion of said commutation



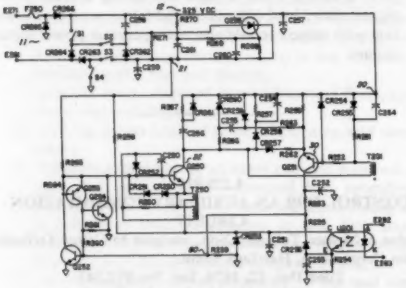
means operate in unison to translate said main semiconductor switch means to its nonconducting state.

4,225,913

SELF-REFERENCING POWER CONVERTER

William E. Bray, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 19, 1978, Ser. No. 944,036
Int. Cl.³ H02P *13/20*
U.S. Cl. 363—97 **13 Claims**



1. A self-referencing power converter for connection to a DC source of power, with a regulation cycle having an energy storage cycle and an energy transfer cycle, comprising:

(a) a transformer having a secondary winding, and a primary winding that is selectively connected across the DC source during the energy storage cycle to permit current flow in one direction, and selectively disconnected during the energy transfer cycle to permit current flow in the other direction in the secondary winding;

(b) power switching means connected to the DC source and to the primary winding, and having control means for permitting the switching means to close, thereby connecting the primary winding across the DC source, and for permitting the switching means to open, thereby disconnecting the primary winding from the DC source;

(c) timing means connected to the control means to permit the switching means to close after it has been open a predetermined period of time;

(d) current sensing means connected to the primary winding for sensing current therethrough, and connected to the control means to permit the power switching means to open when the sensed current reaches the level of a preset power reference; and

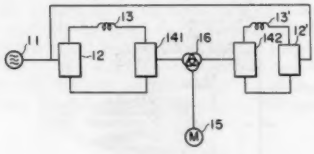
(e) power reference setting means connected to the current sensing means for effectively setting the power reference.

4,225,914

FREQUENCY CONVERTERS

Akio Hirata, Fuchu, and Suzuo Saito, Higashimurayama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 7, 1978, Ser. No. 940,317
Int. Cl.² H02M *5/257*
U.S. Cl. 363—160 **6 Claims**



1. In a frequency converter of the type including a plurality of three phase inverters which produce three phase alternating currents inherently containing higher harmonic components, and a three phase transformer means for synthesizing the outputs of said inverters to obtain three phase alternating current, the improvement wherein said inverters are current type inverters, and said three phase transformer means comprise a plurality of three phase primary windings respectively energized by the outputs of said inverters and a plurality of parallel connected secondary windings thereby reducing harmonic components of lower orders, one of said primary windings and one of said secondary windings having a turns ratio of $1:k\sqrt{3}$ while the other primary winding and the other secondary winding have a turns ratio of 1:k, where k represents the voltage ratio of said transformer means.

4,225,915

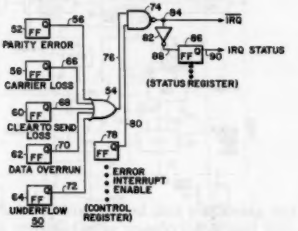
Patent Not Issued For This Number

4,225,916
Patent Not Issued For This Number

4,225,917
ERROR DRIVEN INTERRUPT FOR POLLED MPU SYSTEMS

Edward C. Hepworth, Austin, Tex., and Rodney J. Means, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1976, Ser. No. 655,366
Int. Cl.[3] G06F 3/04
U.S. Cl. 364—200 **8 Claims**



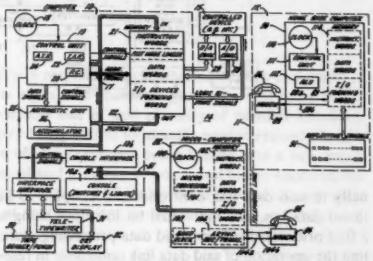
1. A data processing system comprising:
(a) a processing unit;
(b) a plurality of peripheral devices;
(c) means coupled by a bus means to said processing unit and said peripheral devices for transferring digital data therebetween;
(d) polling means within said processing unit for periodically sequentially addressing said peripheral devices to enable a data transfer between said peripheral devices and said processing unit;
(e) means for signalling the occurrence of data handling errors in one of said peripheral devices;
(f) means, responsive to a signal from said means for signalling upon the occurrence of an error, for interrupting the polling operation of said processing unit;
(g) second means responsive to said means for signalling the occurrence of data handling errors for indicating to the processing unit upon the occurrence of an error the nature of the interrupt of said processing unit; and
(h) means responsive to the absence of said signal for completing a data transfer, whereby a polling operation automatically assumes a valid data transfer in the absence of said signal.

4,225,918
SYSTEM FOR ENTERING INFORMATION INTO AND TAKING IT FROM A COMPUTER FROM A REMOTE LOCATION

Bruce R. Beadle; John P. Conners, and Michael E. Larson, Fond du Lac, all of Wis., assignors to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Mar. 9, 1977, Ser. No. 775,986
Int. Cl.[2] G06F 3/04, 11/00
U.S. Cl. 364—200 **26 Claims**

1. In a system for entering information into and taking information from a digital computer by intelligence transmission over two channels, the combination comprising
(A) a digital computer including a clock, control unit, arithmetic unit, system bus, memory and address trunk,
(B) said computer further including and being characterized by
(1) a console and console interface for entering information in machine language and displaying information from various computer locations in machine language, said console and interface comprising
(a) a plurality of switches for entry of word and function signals sequentially one bit at a time,
(b) a plurality of bit indicators associated with respective ones of said switches,
(C) said computer and interface together constituting
(1) means responsive to signals from said switches for setting up any desired binary word and thereafter transferring said word to different memory locations or registers within the computer,
(2) means for supplying to said indicators binary bit voltages to turn the indicators on or off according to the respective bit values of a selected word within the computer,
(D) means coupled to said indicators and responsive to the bit voltages applied thereto for periodically creating in



sequence time serialized message pulse trains with respective time locations having a binary value of a corresponding one of said indicators,
(E) means responsive to a received time serialized pulse train, formed according to a predetermined code so that any train may correspond to one of said switches, for creating in said console the same signals as if the switch represented by the code of the train had been closed,
(F) means for transmitting to a base remote from said computer, via a communications link, the pulse trains created by said means (D),
(G) means for transmitting from said base to same means (E), via a communications link, successive pulse trains which are respectively coded to correspond to successive ones of said switches whose effective actuation is desired, and
(H) means at said base responsive to pulse trains received from said means (F) for converting the serial pulses of each train into a signaled binary word which is indicative of the states of said indicators at that time.
whereby binary words displayed by the indicators at said computer are dynamically signaled at said base and changes in said computer, including its console indicators, may be effected from the base as if the computer's console switches were physically manipulated.

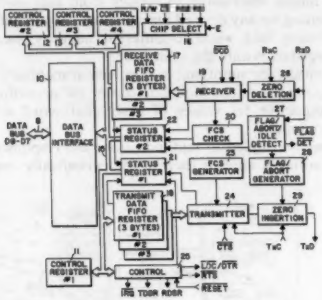
4,225,919
ADVANCED DATA LINK CONTROLLER

Shikun Kyu, Yokohama, Japan, and Edward C. Hepworth, Chattanooga, Tenn., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1978, Ser. No. 921,012
Int. Cl.[3] G06F 3/04
U.S. Cl. 364—200 **7 Claims**

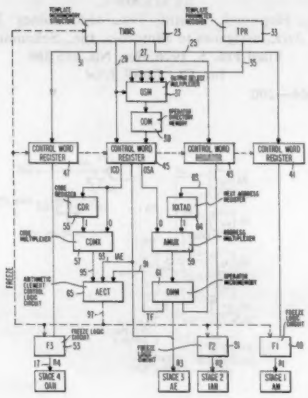
1. In a data link controller for controlling data communications between a bidirectional data bus and a communications

link transmitting and receiving data in serial form, said data link controller comprising a transmitter, a receiver, and a status register, the improvement wherein said status register comprises a plurality of individual bit locations each of which may be concurrently set to a predetermined logic state by control logic in response to one of a first set of operating conditions within said data link controller and which locations may be subsequently read by a data processing system located externally to said data link controller and coupled to said bidirectional data bus, said individual bit locations being arranged in a first prioritized pattern, said data processing system controlling the operation of said data link controller in response to the contents of said status register bit locations in accordance with said first prioritized pattern.



selection means fed by said template store means and controlled by operation code selection data from said micromemory structure means, said selection means selecting a particular one of said plurality of operation codes;

translation means fed by said selection means for translating said selected particular one of said plurality of operation codes into a operation microcode for specifying an operation to be executed in said particular stage in said plurality of stages in said microprogrammable pipelined data processing system; and coordination means receiving said microinstruction for each stage from said micromemory structure means and said operation microcode from said translation means, said coordination means for providing said operation microcode to said particular stage in said plurality of stages coincident with the providing of a microinstruction thereto by said micromemory structure means.



4,225,920

OPERATOR INDEPENDENT TEMPLATE CONTROL ARCHITECTURE

Richard A. Stokes, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 11, 1978, Ser. No. 941,193
Int. Cl.[2] G06F *9/16, 13/00*
U.S. Cl. 364—200 **5 Claims**

1. An operator independent template control architecture for providing microinstructions to a plurality of stages and operation microcode to a particular stage in a microprogrammable pipelined data processing system, said architecture comprising:

micromemory structure means storing a plurality of microinstructions, said micromemory structure means for providing a microinstruction to each stage in said plurality of stages in said microprogrammable pipelined data processing system, said providing being sequenced with data flow therethrough, said micromemory structure means also storing operation code selection data;

template parameter store means storing a plurality of operation codes for a particular stage in said plurality of stages;

4,225,921

TRANSFER CONTROL TECHNIQUE BETWEEN TWO UNITS INCLUDED IN A DATA PROCESSING SYSTEM

Henry F. Hartley, Lowell; Richard A. Lemay, Bolton; Kiyoshi H. Terakawa, Framingham, and William E. Woods, Natick, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

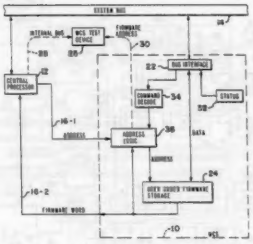
Filed Oct. 2, 1978, Ser. No. 947,990
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—200 **15 Claims**

1. In a data processing system comprising a first data processing unit, a second data processing unit, and means for coupling said first and second data processing units for the bidirectional transfer of information therebetween, the information including instructions generated by the first data processing unit for controlling the operation of the second data processing unit by requesting said second data processing unit

to perform predetermined functions, a response-control apparatus comprising:

A. means, included in said second data processing unit, for receiving an instruction transferred from said first data processing unit by said coupling means;

B. means, included in said second data processing unit, for decoding said received instruction into an operation corresponding to a said requested function to be performed by said second data processing unit;



C. means, included in said second data processing unit, for generating a response to be transferred to said first data processing unit over said coupling means, said response for indicating whether said second data processing unit will perform said requested function; and

D. means, included in said second data processing unit, for delaying said generation of said response by said generating means for a time period related to the particular operation decoded by said decoding means.

4,225,922

COMMAND QUEUE APPARATUS INCLUDED WITHIN A CACHE UNIT FOR FACILITATING COMMAND SEQUENCING

Marion G. Porter, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

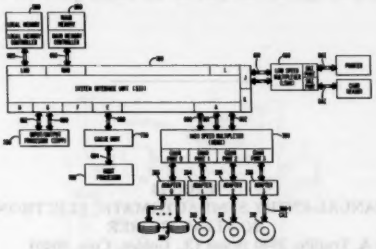
Filed Dec. 11, 1978, Ser. No. 968,311
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 **41 Claims**

1. A cache unit for use with a data processing unit for providing fast access to data and instructions fetched from a main store coupled through a system interface to said cache unit in response to commands, each command including a number of words received from said data processing unit, said cache unit comprising:

command buffer means coupled to said system interface and to said data processing unit, said command buffer means comprising a plurality of addressable locations for storing the number of words comprising each of a first type of said commands;

command queue means coupled to said command buffer means, said command queue means including a buffer having a plurality of multibit locations corresponding in number to at least said plurality of command buffer locations; and,

control means coupled to said command queue means and to said command buffer means, said control means being



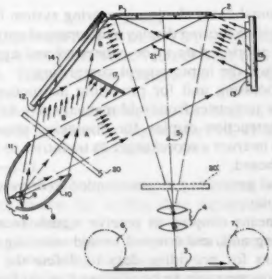
operative in response to a first word of each command to generate signals for loading signals of a first entry into a next available one of said plurality of multibit locations, said entry being coded to identify predetermined characteristics of said command being loaded into a next available one of said plurality of command buffer locations for enabling the storage of a maximum number of said commands at any one time.

4,225,923

ILLUMINATION APPARATUS

John F. Bloemendaal, Rochester; Arthur M. Boone, and Alexander B. Zanolli, both of Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1978, Ser. No. 930,287
Int. Cl.[2] F21V *7/00*
U.S. Cl. 362—301 **6 Claims**



1. An illumination apparatus for illuminating a planar object with a single elongated light source, said apparatus comprising:

means for positioning the object in an illumination position;

a pair of parabolic reflecting surfaces positioned parallel to and adjacent said light source to reflect light rays from said source along paths on opposite sides of the object when the object is in said illumination position; and

a pair of planar reflecting surfaces positioned in said paths respectively to receive the light rays reflected from said parabolic reflecting surfaces respectively and to reflect the respective light rays upon the object from opposite sides thereof.

4,225,924

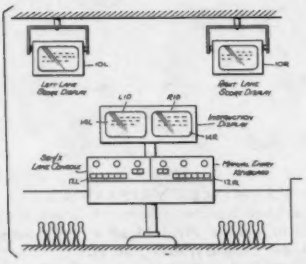
MANUAL-ENTRY SEMI-AUTOMATIC ELECTRONIC BOWLING SCORER

Vito A. Trujillo, 2940 Braun Ct., Golden, Colo. 80401

Filed Aug. 30, 1978, Ser. No. 937,999

Int. Cl.[2] A63D *5/04*; G06F *15/44*

U.S. Cl. 364—411 **33 Claims**



1. In a manual-entry electronic scoring system for bowling, including a video scoring display and a manual entry keyboard for entering scoring data to be processed and applied to the scoring display, the improvement comprising:

a data processing unit for providing instruction signals in response to entries from said manual entry keyboard;

a video instruction display for displaying sequential messages to instruct a scorekeeper as to entries to be made on the keyboard;

video signal generating means coupled to drive said instruction display;

memory means coupled to receive signals from said data processing unit, and coupled to said video signal generating means for providing data to define the content of instruction messages to be displayed on said introduction display; and

display control means coupled to said memory for selecting memory data to be coupled to said video signal generating means.

4,225,925

ELECTRONIC IGNITION CONTROL METHOD AND APPARATUS

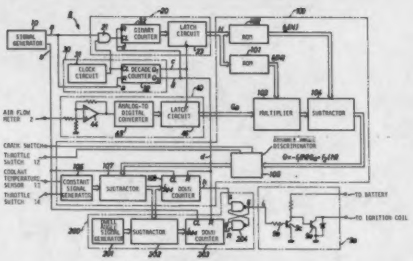
Tadashi Hattori, Okazaki; Mamoru Kobashi, Aichi; Tooru Kawase, Toyota, and Yoshiki Ueno, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 24, 1978, Ser. No. 889,980

Claims priority, application Japan, Mar. 30, 1977, 52-36317; Apr. 19, 1977, 52-44712

Int. Cl.[2] F02B *3/00*; G06F *15/20*

U.S. Cl. 364—431 **12 Claims**



1. An electronic ignition control apparatus for an internal combustion engine having an output shaft rotated by a piston, an ignition coil adapted to generate a spark voltage upon deenergization of the primary winding thereof and a spark plug activated by the spark voltage to ignite the air-fuel mixture metered into a combustion chamber of said engine so as to operate said piston, the control apparatus comprising:

a first signal generator for producing a first signal at a predetermined angular interval of rotation of said output shaft;

a second signal generator for producing a second binary signal indicative of rotation speed N of said output shaft in response to the first signal;

a third signal generator for producing a third binary signal indicative of an amount G_a of air sucked into the combustion chamber of said engine in response to the first signal;

first memory means for storing first data indicating a first parameter $f_1(N)$ in relation to the rotation speed N of said output shaft to produce a fourth binary signal indicative of an optimum value of said first parameter $f_1(N)$ in accordance with the second binary signal, said first parameter defining an ascent of a linear equation, $\theta = -f_1(N) \cdot G_a + f_2(N)$, representing a relationship between an optimum advance angle θ for activation of said spark plug and the amount G_a of the sucked air in consideration with the rotation speed N of said output shaft;

second memory means for storing second data indicating a second parameter $f_2(N)$ in relation to the rotation speed N of said output shaft to produce a fifth binary signal indicative of an optimum value of said second parameter $f_2(N)$ in accordance with the second binary signal, said second parameter defining an ordinates' intersection of the linear equation, $\theta = -f_1(N) \cdot G_a + f_2(N)$, in consideration with the rotation speed N of said output shaft;

a calculation circuit for calculating the linear equation, $\theta = -f_1(N) \cdot G_a + f_2(N)$, in accordance with the third, fourth and fifth binary signals to obtain the optimum advance angle θ in relation to the amount G_a of air; and

a timing signal generator for generating a timing signal in accordance with the optimum advance angle θ such that the primary winding of said ignition coil is deenergized in response to the timing signal.

4,225,926

APPARATUS FOR LOADING AND UNLOADING AN AIRCRAFT AND ASCERTAINING THE WEIGHT OF THE LOAD

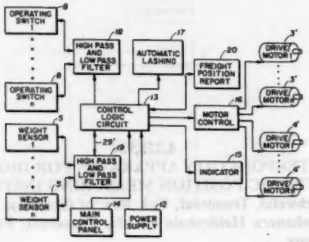
Hans J. Wendt, Buxtehude, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 9, 1979, Ser. No. 2,062

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802003

Int. Cl.[2] G01M 1/12

U.S. Cl. 364—463 **14 Claims**



1. An apparatus for loading and unloading an aircraft and for ascertaining the weight of the load, comprising weighing station means arranged within the aircraft fuselage in such position that the weight of any item of payload to be added to the actual weight of the aircraft must operatively and individually pass said weighing station means for individually measuring the weight of each payload item entering the aircraft, load cell means in said weighing station means to provide individual weight representing electrical signals, electronic logic circuit means, and conductor means operatively connecting said electronic logic circuit means to said load cell means for producing from said individual weight representing electrical signals respective control signals.

4,225,927

Patent Not Issued For This Number

4,225,928

SYSTEM FOR AUTOMATICALLY POSITIONING THE CARRIAGE OF A MACHINE IN NUMERICAL CONTROL SYSTEM AT A REFERENCE POINT

Tetsuo Ohkubo, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1978, Ser. No. 914,616

Claims priority, application Japan, Jun. 16, 1977, 52-70482

Int. Cl.[2] G05B 11/18

U.S. Cl. 364—474 **5 Claims**

1. A system for automatically positioning a carriage at the reference point of a machine using a numerical control system and having a machine bed, a platform mounted with respect to the machine bed, a carriage adapted to move along said machine bed, a first sensor disposed on said system to detect whether the carriage is on the platform to provide coarse positioning of the carriage with respect to a predetermined point on the machine bed, a second sensor disposed on said system for detecting a fine positioning of the carriage, control means for controlling the movement of the carriage characterized in that said control means comprises

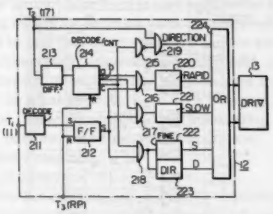
means for producing a positioning command,

decode means for decoding said positioning command and activating said control unit,

decode/count means responsive to changes in the output signal of said first sensor for producing first, second and third status signals,

means for determining the direction of movement of said carriage in response to said first sensor and said decode/count means,

rapid travelling means for moving the carriage in a first direction at high speed in response to said first status signals from said decode/count means,



slow feed means for moving said carriage in a second direction opposite to that of said first direction at slow speed in response to said second status signals from said decode/count means when said carriage passes a predetermined point,

means for producing fine positioning of said carriage in response to said third status signals from said decode/count means, and

means coupled to said determining means, said rapid travelling means, said slow feed means and said actuating means for driving said carriage.

4,225,929

CODE CONVERTER CIRCUITRY SYSTEM FOR SELECTIVELY ROTATING A VIDEO DISPLAY PICTURE

Yasuo Ikeda, Tokyo, Japan, assignor to Taito Corporation, Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,776

Claims priority, application Japan, Mar. 10, 1978, 53-27913

Int. Cl.[3] G06F 3/14

U.S. Cl. 364—521 **11 Claims**

1. A code converter comprising in combination:

(a) memory means for storing data signals at addressable locations therein;

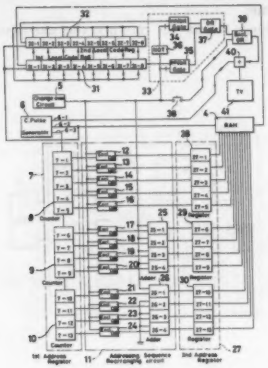
(b) a first address register for at least temporarily storing address representing signals;

(c) a second address register having the output thereof coupled to said memory means;

(d) control means;

(e) an address rearranging circuit controlled by said control means and disposed between said first address register and

said second address register for selectively transferring said address representing signals or a predetermined modification of said address representing signals to said second address register, said second address register being coupled to said memory means for selecting the data signals read out from said memory means; and



(f) local code register means connected to the output of said memory means and to said control means for receiving the data signals read out from memory means and selectively supplying said data signals in a first order or a second order.

4,225,930

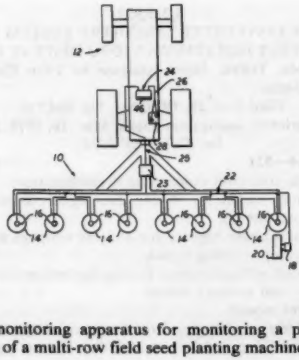
PLANTER POPULATION MONITOR

David E. Steffen, Chatham, Ill., assignor to Dickey-john Corporation, Auburn, Ill.

Filed Sep. 5, 1978, Ser. No. 939,605

Int. Cl.[2] G06F *15/20*; G08B *21/00*

U.S. Cl. 364—555 **24 Claims**



1. A monitoring apparatus for monitoring a plurality of functions of a multi-row field seed planting machine including ground speed sensor means and including seed sensor means associated with each row of said multi-row seed planting machine, comprising: means including a microprocessor operating in accordance with a predetermined program for continually receiving and storing population data simultaneously from all of said plurality of seed sensor means and from said ground speed sensor means, and user accessible control means coupled with said microprocessor and including observable indicator means, the microprocessor including means for energizing said observable indicator means for producing observable indications derived from the population data substantially immediately as such indications are called for by said user accessible control means.

4,225,931

INTERPOLATION APPARATUS FOR DIGITAL ELECTRONIC POSITION MEASURING INSTRUMENT

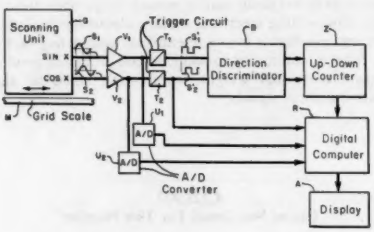
Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jun. 15, 1978, Ser. No. 915,955

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729697

Int. Cl.[2] G06F *7/38*

U.S. Cl. 364—577 **8 Claims**



1. An interpolation apparatus for evaluating at least one periodic analog signal generated by an electronic position measuring device having a measuring scale and a scanning unit, moveable relative to the scale, said analog signal having an amplitude which varies in a periodic manner as a function of the position of the scanning unit with respect to the scale, said apparatus comprising:

digitizing means, responsive to the analog signal, for digitizing the analog signal to generate a first digital signal which corresponds in a predetermined manner with the amplitude of the analog signal;

a digital computer responsive to the first digital signal;

interpolating means, included in the computer, for generating an interpolation signal in response to the digital signal, said interpolation signal being representative of the position of the scanning unit with respect to the scale and having a higher resolution than the spatial period of the periodic analog signal; and

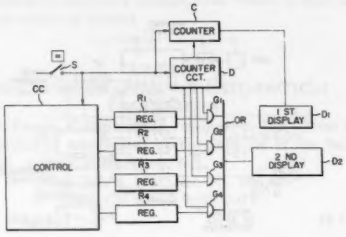
evaluating means, also responsive to the analog signal, for generating a second digital signal representative of the position of the scanning unit with respect to the scale, said second digital signal having a spatial resolution lower than that of the interpolation signal.

4,225,932

INSTRUCTIONAL CALCULATOR

Reiji Hirano, Yokohama; Koichi Mochizuki, Tokyo; Tokio Yasui, Tokyo, and Jyoji Shimazu, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 755,593, Dec. 30, 1976, abandoned. This application Oct. 17, 1978, Ser. No. 952,054
Claims priority, application Japan, Jan. 20, 1976, 51-5193; Feb. 5, 1976, 51-11687; Apr. 26, 1976, 51-47510
Int. Cl.[2] G06F *15/20*; G09B *19/02*
U.S. Cl. 364—710 22 Claims



1. An electronic calculator comprising:

means for visualizing calculator presentations:

input means including means for entering numerals defining operands, means for instructing arithmetic operations between said operands, and means for selectively instructing the display of final calculated results only, and for instructing the display of partial calculated results of a pair of operands by said visualizing means;

calculating circuitry coupled between said input means and said visualizing means and including means for carrying out arithmetic operations in accordance with the information entered from said input means; and

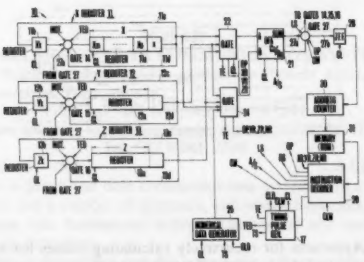
control means responsive to the operation of said display instructing means for controlling said calculating circuitry to generate said final and partial calculated results, and for applying the selected calculated results for display on said visualizing means.

4,225,933

EXPONENTIAL FUNCTION COMPUTING APPARATUS

Hiroshi Monden, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1978, Ser. No. 961,474
Claims priority, application Japan, Nov. 19, 1977, 52-138440
Int. Cl.[3] G06F *7/556*
U.S. Cl. 364—715 11 Claims



1. Apparatus for computing an expoential function a^X with an N radix computer where a represents a positive constant and X a variable, comprising:

generating means for generating a logarithmic value $\log_a(1+N^{-k})$ or $N^k \cdot \log_a(1+N^{-k})$ where k=0, 1, 2 . . . m and where said positive constant a ($a \neq 1$) is the base of the logarithm;

first memory means;

subtracting means for performing a subtraction operation wherein a given said logarithmic value generated by said generating means is repeatedly subtracted from the contents of said first memory means and the remainder of each subtraction is stored in said first memory means, said subtractions being repeated until said contents of said first memory means is reduced to a value less than said logarithmic value;

determining means for determining the number of repeated subtractions which occurs in said subtraction operation and the corresponding value of k used to generate said given logarithmic value used in said subtraction operation;

decomposing means for setting a value corresponding to said variable X in said first memory means and for the carrying out a decomposing sequence wherein said generating means is caused to sequentially generate said logarithmic value for in a range from k=o to k=m and, for each logarithmic value generated, said subtracting means is caused to perform said subtraction operation;

second memory means;

third memory means;

shifting means for carrying out a shifting sequence wherein a value corresponding to the contents of said second memory means is stored in said third memory means, the contents of said third memory means are shifted k number of digits in a predetermined direction, the shifted contents of said third memory means are added to the contents of said second memory means and the sum is stored in said second memory means; and

multiplication means for detecting the termination of said decomposing sequence and, upon said termination, for setting an initial value I in said second memory means and then for causing a multiplication sequence wherein said shifting means is caused to carry out said shifting sequence for each of said subtractions of said subtracting means caused by said decomposing means, with the number of said shifting sequences and said corresponding value of k used in each said shifting sequence being determined by said determining means;

whereby upon termination of said multiplication sequence, the contents of said second memory means correspond to the value of a^X.

4,225,934

MULTIFUNCTIONAL ARITHMETIC AND LOGIC UNIT IN SEMICONDUCTOR INTEGRATED CIRCUIT

Jerry L. Vandierendonck, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

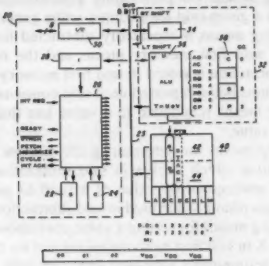
Continuation of Ser. No. 176,664, Aug. 31, 1971, Pat. No. 4,037,094. This application Jul. 14, 1977, Ser. No. 815,871
Int. Cl.[2] G06F *7/50*
U.S. Cl. 364—716 1 Claim

1. In a digital processor system that includes an arithmetic logic unit for performing a plurality of different arithmetic and logic operations in response to coded instructions, the arithmetic logic unit being formed in a single semiconductor integrated circuit device, a parallel bus connected to the device, the arithmetic logic unit including:

(a) decode means for receiving in parallel said coded instructions from said parallel bus and providing a plurality of multi-bit sets of parallel output control signals, each set respectively corresponding to a different one of the arithmetic and logic operations that can be performed by the system; and

(b) logic circuit means for receiving said plurality of sets of parallel control signals, one set at a time, and selectively effecting logic operations corresponding to the selected operation, the logic circuit means also receiving parallel data inputs from two separate sources on the device

loaded from said parallel bus, and producing a parallel multi-bit output representing the selected operation on the



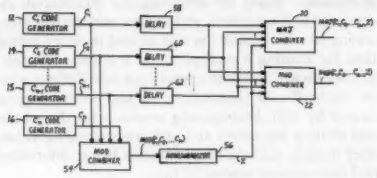
data inputs, the output being stored on the device and outputted via said parallel bus.

4,225,935

CODING METHOD AND SYSTEM WITH ENHANCED SECURITY

John W. Zscheile, Jr., Murray, and Billie M. Spencer, Bountiful, both of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed Aug. 30, 1977, Ser. No. 830,274
Int. Cl.[2] G06F *1/02*
U.S. Cl. 364—717 **12 Claims**



1. A method of producing a code with enhanced acquisition security, comprising the steps of:

generating a plurality of linear component codes, $C_1, C_2, \ldots C_n$;

combining said linear component codes to form a linear first composite code in accordance with a first composite rule of such a character that said first composite code does not correlate with said component codes;

nonlinearizing said first composite code to form a nonlinear second composite code; and

combining said linear component codes, $C_1, C_2, \ldots C_{n-1}$, with said nonlinear second composite code to form a nonlinear acquisition composite code in accordance with a second composite rule of such a character that at least one of said component codes correlates with said acquisition composite code.

4,225,936

FUNCTION GENERATOR WITH STORAGE MATRIX

Wolfgang Lesche, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,491
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2738352
Int. Cl.[2] G06F *1/02*
U.S. Cl. 364—718 **9 Claims**

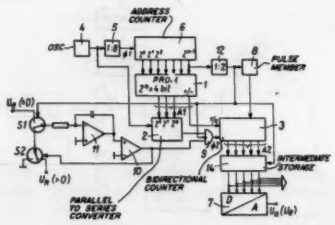
1. A function generator for an arbitrarily specifiable function comprising:

(a) an oscillator;

(b) an address counter having its input coupled to the output of said oscillator;

(c) a storage matrix with 2^n address locations each capable of storing m bits the number m of said bits being determined by the maximum change in value of the function between two adjacent addresses, the data stored at each address being only the change in value from the previous adjacent address, said storage matrix receiving its address input from said counter;

(d) a bidirectional counter;



(e) means to drive said bidirectional counter with a frequency higher by a factor of 2^{m-1} than the frequency driving the address counter;

(f) a digital to analog converter receiving its input from said bidirectional counter and providing the function generator output in analog form; and

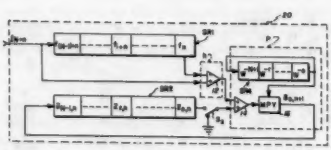
(g) a control member, having as an input an external measurement variable for coupling the stored values in said storage matrix sequentially to said integrating means only up to an address dependent on said external measurement coupled so as to control the input to said integrating means.

4,225,937

METHOD AND APPARATUS FOR SUPPRESSION OF ERROR ACCUMULATION IN RECURSIVE COMPUTATION OF A DISCRETE FOURIER TRANSFORM

Donald A. Perreault, Thousand Oaks, and Thomas C. Rich, Redondo Beach, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 18, 1978, Ser. No. 943,085
Int. Cl.[2] G06F *15/34*
U.S. Cl. 364—726 **29 Claims**



1. Apparatus for recursively calculating values for a serial output signal, said apparatus comprising the combination of

input function generator means for serially generating successive input functions in response to successive input signal sample sets;

output function generator means coupled to said input function generator means for recursively calculating said serial

output signal values in response to said successive input functions and successive sets of previously calculated output signal values;

feedback means coupled to said output function generator means for sequentially accumulating said successive sets of previously calculated output signal values for said output function generator means; and

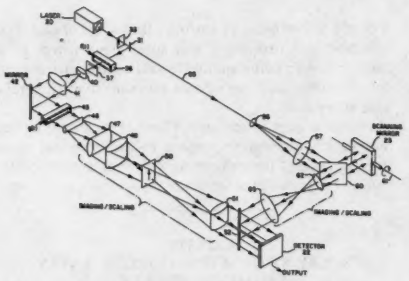
refresh means coupled to said feedback means for periodically substituting a set of independently calculated output signal values for a corresponding one of said sets of previously calculated output signal values, whereby any accumulation of recursive computation errors in said output signal values is limited.

4,225,938

TIME-INTEGRATING ACOUSTO-OPTICAL PROCESSORS

Terry M. Turpin, Columbia, Md., assignor to The United States of America as represented by the Director of the National Security Agency, Washington, D.C.

Filed Dec. 5, 1978, Ser. No. 966,849
Int. Cl.³ G06G *9/00, 7/19*
U.S. Cl. 364—822 **16 Claims**



1. A time-integrating optical processor comprising:

a light beam;

a two-dimensional time-integrating detector;

means for modulating the light beam in a first spatial dimension, x, said x-modulating means including a first one-dimensional spatial light modulator;

means for expanding the x-modulated beam in a second, mutually orthogonal spatial dimension, y;

means for modulating the light beam in the second spatial dimension, said y-modulating means including a second one-dimensional spatial light modulator; and

means for imaging said expanded x-modulated and said y-modulated light beams onto the detector.

4,225,939

BIDIRECTIONAL DATA COMMUNICATION SYSTEM

Kenji Yashiro, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 14, 1977, Ser. No. 787,591
Claims priority, application Japan, Apr. 16, 1976, 51/43953
Int. Cl.² H04L *7/04*
U.S. Cl. 364—900 **8 Claims**

4. A bidirectional data communications system with a central unit and a number of terminals, and with downstream and upstream data transmitted between the central unit and the terminals including:

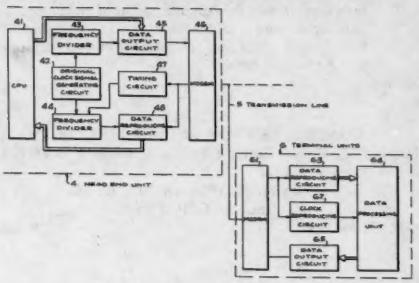
means at the central unit for transmitting downstream data containing self-clocking transitions;

means at each terminal for transmitting upstream data in response to and in synchronism with the self-clocking transition in the downstream data;

clock means at the central unit for generating original clock pulses having a frequency that is a multiple of the data rate at the central unit;

controllable frequency divider means responsive to the original clock pulses for reducing the frequency to that of the central unit data rate;

means responsive to the upstream data for resetting said



controllable frequency divider means in accordance with the phase of the upstream data; and

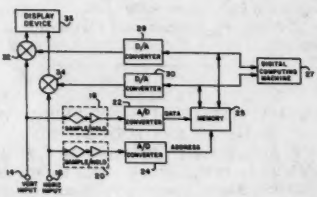
data reproducing means responsive to the reduced frequency output of the controllable frequency divider means and to the upstream data for providing signals that are compensated in timing for the timing variations in the upstream signals.

4,225,940

OSCILLOSCOPE SYSTEM FOR ACQUIRING, PROCESSING, AND DISPLAYING INFORMATION

Hiro Moriyasu, Portland; Jack A. Gilmore, Aloha; Willem B. Velsink, Beaverton, and Luis J. Havarro, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 736,677, Oct. 28, 1976, abandoned, which is a continuation of Ser. No. 631,345, Nov. 12, 1975, abandoned, which is a continuation of Ser. No. 321,876, Jan. 8, 1973, abandoned. This application Oct. 2, 1978, Ser. No. 948,068
Int. Cl.² G06F *3/05*; G01R *13/20*; G06F *5/00, 13/00*
U.S. Cl. 364—900 **4 Claims**



1. A display system which comprises in combination,

(a) analog display means,

(b) analog input means,

(c) digital input means, and

(d) switch means selectively coupled to one of said analog and digital input means and to said display means, said switch means including first converter means responsive to said selection of a digital input to convert said digital input to an analog input, further including second converter means coupled to said analog input means for converting said input signal to digital form and storage means connected to said second converter means for storing ordered pairs of signals in digital form indicative of individual points of analog signals at said analog input means, wherein said second converter means and said storage means comprise:

a memory and means coupled to said memory and said analog input means which includes an amplifier coupled

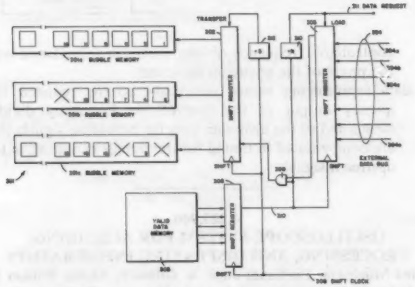
to said analog input means, a first sample and hold circuit coupled to said amplifier, a trigger generator coupled to said amplifier, a time base generator driven by said trigger generator, a second sample and hold circuit driven by said generator, a strobe circuit driving said first sample and hold circuit, a delay circuit coupled to said strobe circuit and said second sample and hold circuit, said first sample and hold circuit providing data for storage in said memory, said second sample and hold circuit providing the address in said memory for storage of said data.

4,225,941

CONTROLLER FOR BUBBLE MEMORIES

Richard M. Moran, Culver City, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Oct. 30, 1978, Ser. No. 955,945
Int. Cl.³ G11C *19/08*
U.S. Cl. 364—900 **9 Claims**



1. An apparatus for directing the selective transfer of m individual data bits between a first m-bit parallel data bus and a plurality of other parallel data buses each having a respective set of independent parallel lines, in accordance with steering data provided via a steering data bus, comprising:

steering circuit means, connected to said first bus, said other buses and said steering data bus, for sequentially transferring said m data bits between said first bus and selected independent lines of said other buses in accordance with provided steering data associated with each of said individual bits.

4,225,942

DAISY CHAINING OF DEVICE INTERRUPTS IN A CATHODE RAY TUBE DEVICE

Frederick E. Kobs, Pepperell, Mass.; Joseph L. Ryan, Nashua, N.H.; Minoru Inoshita, Glendale, Ariz., and Gerald N. Winfrey, Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 26, 1978, Ser. No. 973,364
Int. Cl.³ G06F *9/46*
U.S. Cl. 364—900 **7 Claims**

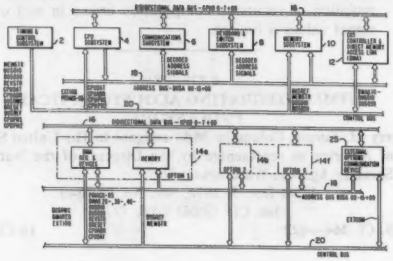
1. A terminal system comprising:

a system bus;

a memory subsystem coupled to said system bus and storing service routines in a read only memory;

a central processor subsystem coupled to said system bus including a microprocessor for generating a plurality of predetermined address signals in response to a microprocessor interrupt request signal;

a plurality of peripheral device subsystems coupled to said system bus, said system bus including an external request interrupt signal line coupled in common to each of said plurality of peripheral device subsystems and said central processor subsystem, said system bus further including a plurality of external acknowledge interrupt signal lines coupled serially to each of said plurality of peripheral devices and said central processor subsystem, one of said plurality of peripheral device subsystems forcing said external request interrupt signal line to a first level, said one of said plurality of peripheral device subsystems being responsive to one of said plurality of external acknowledge interrupt signal lines at a first level for sending a plurality of address signals over said system bus to modify said predetermined address signals, said modified address signals being applied to said memory for reading a first



location in said memory storing a first word of said service routines, said first word and subsequent words of said service routine being applied to said central processor unit for activating said one of said plurality of peripheral device subsystems;

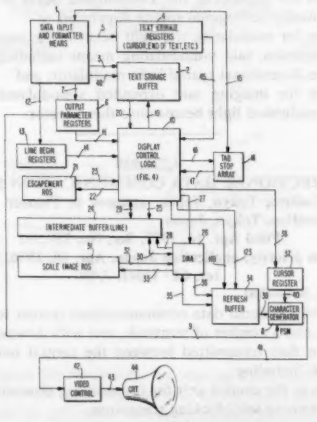
said central processor subsystem further including interrupt and priority means responsive to said external request interrupt signal for generating a first of said plurality of external acknowledge interrupt signal lines.

4,225,943

DISPLAY SYSTEM FOR HORIZONTALLY SEGMENTING TEXT

Dennis G. Busch, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 762,377, Jan. 25, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,529
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **16 Claims**



1. In a system for displaying information such as a number of lines of characters, symbols, etc., in horizontal segments, due to a measure, which is the distance between a left and a right

margin, for said information being wider than the width of a display included in said system, the improvement comprising in combination:

(a) means for selecting an operating mode for said system including a proportional spacing mode;

(b) means when operating in said proportional spacing mode for horizontally segmenting said information to obtain. for display, a horizontal segment of said information having a beginning following and not including a beginning of said measure and made up of a segment of each of said lines with each horizontal segment beginning with each whole character, symbol, etc., following (1) said beginning of said horizontal segement and (2) any character, symbol, etc., which overlaps said beginning of said horizontal segment to be displayed; and

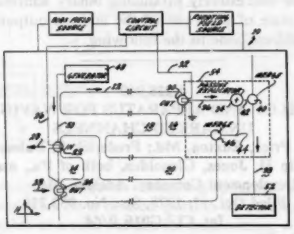
(c) means for separately displaying said horizontal segment of said information.

4,225,944

BUBBLE MEMORY CHIP ORGANIZATION-FOLDED LOOP TYPE

Sidney J. Schwartz, Vista, and Chung H. Hsin, San Diego, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 1, 1978, Ser. No. 901,357
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—15 **25 Claims**



1. A bubble memory organization comprising:

a bubble propagation structure including magnetic elements disposed in an arrangement on which magnetic bubbles propagate element-to-element in response to a rotating in-plane magnetic field;

the arrangement including a predetermined number of storage loops having a number of said magnetic elements on which said bubbles circulate;

means for generating bubbles and for propagating said bubbles for transfer into said storage loops; and

a plurality of bubble manipulation devices for performing a desired function;

each storage loop containing at least one in-plane fold to vary the number of propagate elements so that said bubble manipulation devices can be selectively located relative to one another with some of said bubble manipulation devices being connected to and operable by one conductor for manipulating said bubbles relative to said storage loop and relative to other manipulation devices;

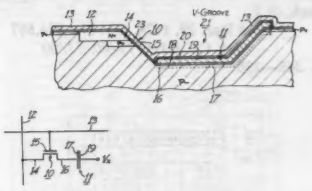
said other bubble manipulation devices being transfer-in ports and transfer-out ports for transferring bubbles into said storage loops and out of said storage loops and located on one side of each of said storage loops with one conductor line connected to both said ports for actuating said transfer-in or transfer-out of bubbles as desired.

4,225,945

RANDOM ACCESS MOS MEMORY CELL USING DOUBLE LEVEL POLYSILICON

Chang-Kiang Kuo, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 648,594, Jan. 12, 1976, and Ser. No. 722,841, Sep. 13, 1976. This application Jun. 6, 1977, Ser. No. 803,495
Int. Cl.[2] G11C *11/24, 11/40*
U.S. Cl. 365—149 **9 Claims**



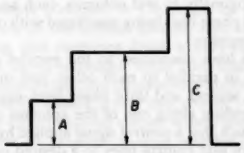
6. A semiconductor memory cell of the type having an MOS transistor and an MOS capacitor, comprising a semiconductor body having a major face, an anisotropically-etched V-groove in said face, the capacitor being formed in the V-groove by an upper plate in the form of a conductive layer overlying a dielectric and a lower plate in the form of an inverted surface-adjacent region of the semiconductor material in the V-groove, the MOS transistor being formed in the V-groove by a heavily-doped region of one type and a buried region of the other type exposed at a side wall of the V-groove along with a gate overlying the exposed buried region but separated therefrom by a gate insulator.

4,225,946

MULTILEVEL ERASE PULSE FOR AMORPHOUS MEMORY DEVICES

Ronald G. Neale, Carshalton Beeches, England, and Grady M. Wood, Melbourne, FL., assignors to Harris Corporation, Melbourne, Fla.

Filed Jan. 24, 1979, Ser. No. 5,943
Int. Cl.[2] G11C *7/00*
U.S. Cl. 365—163 **22 Claims**



1. A method of resetting a filament-type memory device including spaced electrodes between which extend a body of generally amorphous substantially nonconductive memory semiconductor material which, when a set voltage pulse in excess of a given threshold voltage value and duration is applied to said electrodes, has formed therein a crystalline low resistance filamentous path resettable into a generally amorphous condition by application of one or more voltage pulses producing reset current pulses through said filamentous path which heat the same to a temperature which changes the phase of the crystalline filament and are of a duration which is so short that upon termination of each reset current pulse the filamentous path will be quickly quenched to leave at least portions of the filamentous path in a substantially amorphous condition, said method comprising: applying to said electrodes a plurality of reset voltage pulses which produce a plurality of reset current pulses each having a first stage amplitude and duration sufficient to heat the filament to the phase change

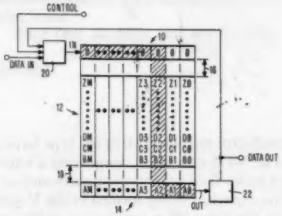
temperature of the material and a second stage amplitude and duration larger than said first stages and sufficient to change the phase of the crystal structure.

4,225,947

THREE PHASE LINE-ADDRESSABLE SERIAL-PARALLEL-SERIAL STORAGE ARRAY

Edwin D. Councill, Hopewell Junction; H. Janet Kelly, Wappingers Falls, and Hua-Tung Lee, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,587
Int. Cl.[2] G11C *11/40, 13/00*
U.S. Cl. 365—238 **6 Claims**



1. A controlled three phase line-addressable serial-parallel-serial storage array comprising:

a serial input register for accepting data bits at an input;

a serial output register for providing data bits at an output;

a parallel register having a plurality of parallel columns, each said column arranged between a storage position in said input register and a storage position in said output register, for receiving data bits from said serial input register and for transferring data bits to said serial output register;

first, second, and third phase lines connected to each said registers; and

control lines connected to each said registers, each one of said control lines being adapted to selectively inhibit the propagation of data bits in said registers;

the first, second, and third phase lines connected to the parallel register being arranged in parallel to each other, and orthogonally to said columns, each said first, second and third phase lines being associated with one row of said parallel register;

the control lines connected to the parallel register being arranged in parallel to each other, and orthogonally to said first, second, and third phase lines, each said control lines extending along one of the columns of the parallel register such that a control signal applied by means of one or more of said control lines to a desired one or more of the columns selectively inhibits or permits data bit propagation from one row of said parallel register to another along said one or more columns.

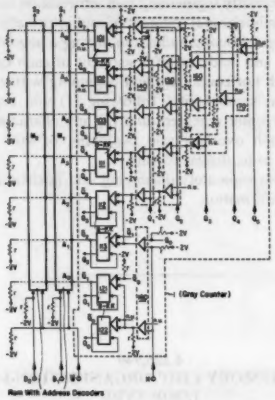
4,225,948

SERIAL ACCESS MEMORY DEVICE

Walter H. Schuller, Zandvoort, Netherlands, assignor to FDS Fast Digital Systems S.A. of Thonex, Thonex, Switzerland

Filed Oct. 6, 1978, Ser. No. 949,251
Claims priority, application Switzerland, Oct. 11, 1977, 12380/77
Int. Cl.[2] G11C *8/00*
U.S. Cl. 365—239 **4 Claims**

1. A serail access memory device made in integrated circuit technology and comprising a random access memory including one or more memory units each incorporating an associated address decoder, said random access memory having at least one data input, at least one data output, at least one write-enable input and at least two address inputs, and further comprising a sequential address code generator having a plurality of address outputs and a control input, said control input being connected to a clock signal source and each address output being connected to a corresponding one of the said address inputs of the random access memory, the combination of states of all address outputs at a given time constituting an individual



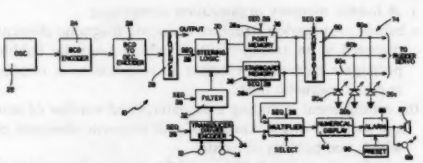
address code determined by the structure of the address code generator and a change from a generated address code to the following one being caused by a clock signal emitted by the said clock signal source, wherein the address code generator is arranged for successively producing binary address codes in which the state of only one of the address outputs changes from one address code to the following.

4,225,949

METHOD OF AND APPARATUS FOR NAVIGATING UNMARKED CHANNELS

Douglas R. Price, Ruxton, Md.; Frederick F. Dalessio, Aston, and Phillip H. Jones, Glenolden, both of Pa., assignors to Atlantic Development Company, Adelphi, Md.

Filed Oct. 17, 1978, Ser. No. 952,218
Int. Cl.[2] G01S *9/68*
U.S. Cl. 367—96 **20 Claims**



1. A navigational apparatus for guiding a vessel above the deepest part of a channel, comprising:

first and second transducer means mounted athwartship and equally spaced from the center of said vessel;

means for operating said first and second transducer means to transmit energy pulses downwardly through the water to be reflected from the channel bottom;

means for operating said first and second transducer means to receive the reflected energy pulses;

means for filtering spurious signals received by said first and second transducer means;

means for measuring a time duration between transmission of pulses and reception of corresponding, reflected pulses at each one of said transducers and for generating first and second electrical signals indicative respectively of channel depths on opposite sides of said vessel;

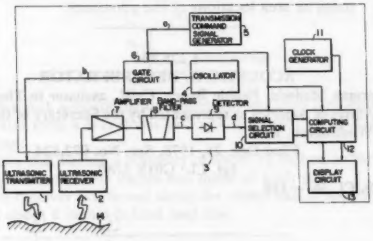
means for comparing said first and second electrical signals;
means for displaying a port, starboard or maintain course steering command; and
means responsive to said comparing means for controlling said display means as a function of channel depth to display one of said steering commands depending upon the location of the deepest part of the channel relative to said vessel to enable guiding of said vessel above the deepest part of said channel.

4,225,950

AUTOMOBILE DISTANCE MEASURING APPARATUS

Masao Kotera, and Yoshiyuki Kago, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 1, 1978, Ser. No. 930,017
Claims priority, application Japan, Sep. 2, 1977, 52-106018
Int. Cl.[2] G01S 9/68
U.S. Cl. 367—97 2 Claims



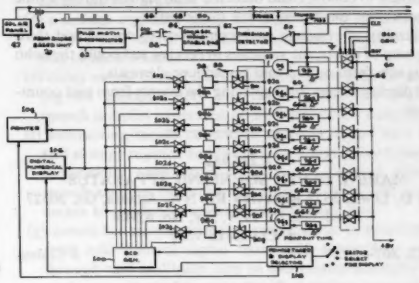
1. An automobile distance measuring apparatus comprising:
means mounted on a desired portion of an automobile in opposition to a road surface for transmitting wave signals toward said road surface and receiving reflected wave signals from said road surface;
oscillator means responsive to a transmission command signal for intermittently applying a drive signal to said transmitting and receiving means, causing said transmitting and receiving means to intermittently transmit wave signals toward said road surface;
a signal selecting means for receiving the reflected wave signals from said transmitting and receiving means and selecting from said reflected wave signals only wave signals of a predetermined intensity;
means for generating a plurality of groups of pulses, the number of pulses in each group being related to the time between each said transmission command signal and each of said selected wave signals;
first means for counting the number of pulses in a plurality of said groups;
second means for counting the number of said groups having pulses which are counted by said first means; and
means for averaging the number of pulses counted in said first means over the number of groups counted by said second means when said second means counts a predetermined number of said groups so as to generate automobile to road surface distance data, said first counting means integrating said data, and said averaging means averaging said data over said predetermined number.

4,225,951

FISH COUNTER WITH SCANNING TRANSDUCER

Albert S. Menin, Sylmar, and Merrill E. Fife, Canyon Country, both of Calif., assignors to The Bendix Corporation, North Hollywood, Calif.

Filed Feb. 5, 1979, Ser. No. 9,632
Int. Cl.[2] G01S 9/60
U.S. Cl. 367—105 11 Claims



1. In a system for counting fish migrating in a body of water including sonar transducer means positioned in the water,
electronic circuit means for providing transmit pulses to said transducer means and for receiving echo signals from said transducer means,
said circuit means including a source of electrical power,
an electric clock circuit connected to said source producing clock pulses at regular intervals to initiate said transmit pulses,
receiver means,
means responsive to a time interval after the initiation of said transmit pulses for enabling said receiver means to receive echo pulses,
and counter means connected to receive and count the echo pulses from said receiver means:
wherein the improvement comprises at least one acoustic focusing liquid lens transducer comprising a housing which is generally circular in at least one plane, acoustically transparent and filled with a low sound velocity liquid, a large numer of individual piezoelectric transducer elements arranged in the inside of said housing across an arc of the bottom thereof, said elements each transmitting and receiving from a very narrow beam width and being arranged such that said transmitted beams are side by side and successively illuminate a generally fan-shaped volume across said stream;
a first binary coded decimal circuit which responds to said clock pulses to produce a large number of sequential binary signals and a first group of electronic switches each of which is connected to one of said transducer elements, said switches being successively closed by said binary signals to initiate said transmit pulses;
time delay means responsive to said clock pulses initiating a delay period and then enabling said receiver for a set period to receive any echo signals resulting from the immediately preceding transmit pulse, means for amplifying said echo signals, a threshold detector for detecting only echo signals above a certain magnitude, and a signal conductor to which said signals are supplied;
a second binary coded decimal circuit connected to receive said clock pulses in synchronism with said first binary coded decimal circuit to produce a large number of binary signals and a second group of electronic switches connected to said power source, which switches are successively closed by said binary signals,
a plurality of AND gates each of which has one input terminal connected to one of said second group of electronic switches,

a plurality of adjustable range gates connected to the other input terminal of said AND gates and having as input signals said timing pulses such that said AND gates conduct from a time initiated by said timing pulses to a time limit set on said range gates,

a third group of electronic switches connected to receive input signals from the said AND gates and said signal conductor such that each of said electronic switches is closed to conduct said detected echo signals during a time period set on its respective range gate;

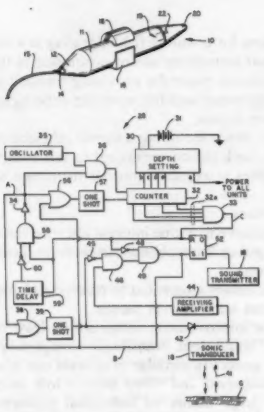
a plurality of counters each connected to one of said third group of electronic switches to receive and count the echo signals from one of said transducer elements,

and display means for displaying the counts from said counters.

4,225,952
MARINE DEPTH SOUNDING APPARATUS

Frank D. Lewis, 5325 Riverview Rd. NW, Altanta, Ga. 30327

Filed Jan. 18, 1979, Ser. No. 4,345
Int. Cl.[2] G01S *9/68*
U.S. Cl. 367—112 **8 Claims**



1. Marine depth sounding apparatus comprising

a watertight housing adapted to float with a predetermined attitude on the surface of a body of water;

means carried by said housing and operative to emit first signals into said body of water so as to generate a second signal which is a function of the depth of water beneath said floating housing; and

means mounted in said housing and operative in response to said second signal to generate a third signal which is detectable from outside said housing only when said second signal corresponds to a depth which is less than a predetermined depth.

4,225,953
PERSONNEL LOCATOR

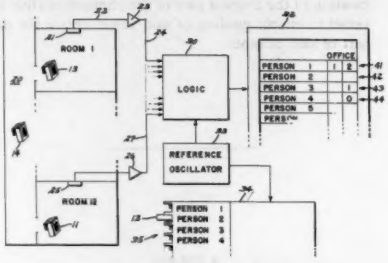
William F. Simon, 235 W. Fairbault, Duluth, Minn. 55803; William C. Torrey, 801 Seventh Ave., E., Superior, Wis. 54880, and Chris W. Hull, 1096 85th Ave., W., Duluth, Minn. 55808

Filed Sep. 29, 1978, Ser. No. 947,112
Int. Cl.[2] H04B *11/00*; G08B *5/00*
U.S. Cl. 367—117 **12 Claims**

1. A personnel locating system, comprising:

a plurality of transmitter units adapted to be worn or carried by personnel whose locations are to be determined, each of said transmitter units adapted for transmitting signals having a common frequency during separate predetermined time intervals on a recurring basis;

a plurality of receiving means for mounting in rooms or areas to be monitored for locating the personnel, each of said receiving means operative to receive the signals transmitted by any of said transmitter units;



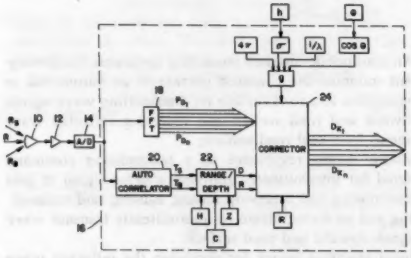
decoder means including time reference means and operative in response to signals received by said receiving means during said predetermined time intervals to produce signals indicative of the location of said transmitter units; and

display means connected to receive said location indicative signals and operative in response thereto to display the room or area locations of the personnel.

4,225,954
ACOUSTICAL DEVERBERATOR

Herman Medwin, Pebble Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 21, 1978, Ser. No. 972,124
Int. Cl.[3] G01S *3/80*
U.S. Cl. 367—118 **7 Claims**



1. An acoustic deverberator comprising:

(a) means for receiving a sound signal from a transient sound souce in water, said sound signal having a direct signal component and surface and bottom reflected signal components;

(b) means for transforming said received sound signal into a pressure amplitude for each of a plurality of discrete frequencies;

(c) means for determining from said received sound signal the delay differences between said direct signal component and said surface and bottom reflected signal components;

(d) means for computing, using said delay differences, the range of said sound source from said receiving means and the depth of said sound source in said water; and

(e) means for correcting the pressure amplitude of said discrete frequencies using said sound source range and depth

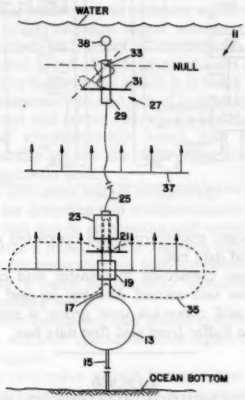
and known reflection coefficients to produce a deverberated signal.

4,225,955

THIN DISK ACOUSTIC BAFFLE SYSTEM

Michael L. Barlow, Silverdale, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 7, 1978, Ser. No. 967,198
Int. Cl.[3] H04B *11/00*
U.S. Cl. 367—131 **2 Claims**



2. A thin disk acoustic baffle system for isolating a receiver in sea water from a waveform having a frequency of 25 KHz comprising:

(a) a thin disk having a diameter of about 12 inches, a thickness of about 0.063 inches and made of lead; and

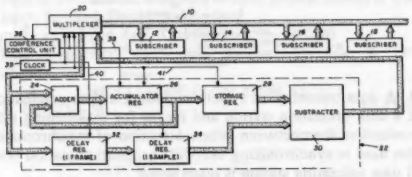
(b) said receiver positioned along the center axis of said disk and about 6 inches behind said disk.

4,225,956

MULTIPLEX CONFERENCE BRIDGE

William L. Betts, Maderia Beach, and L. Ray Blackman, Sarasota, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed Aug. 28, 1978, Ser. No. 937,444
Int. Cl.[2] H04M *3/56*
U.S. Cl. 370—62 **5 Claims**



1. Apparatus for establishing a conference call between a plurality of subscriber stations on a time division multiplex loop wherein each subscriber station is assigned a time slot within a frame for transmitting and receiving digitized speech samples, comprising:

(a) means for generating a control signal synchronous with said frame and having a first state in time coincidence with each time slot which is assigned to a subscriber station in the conference call and a second state in time coincidence with each time slot which is assigned to a subscriber station not included in the conference call,

(b) an accumulating register for accumulating therein a sum of digitized speech samples generated by the conference subscriber stations, said accumulating register operating responsively to said control signal to receive inputs and transfer the contents thereof as an output,

(c) means for adding digitized speech samples received from said conference subscriber stations through said multiplex loop to the output from said accumulating register and for transferring the output of said means for adding to said accumulating register,

(d) a storage register having the input thereof connected to receive said sum from said accumulating register at the end of each frame,

(e) delay means connected to said multiplex loop for delaying for approximately one frame period the digitized speech samples generated by said subscriber stations,

(f) subtracting means connected to receive said sum from said storage register and the output of said delay means for sequentially subtracting each of the delayed digitized speech samples from the sum received from said storage means to produce a series of partial sums, and

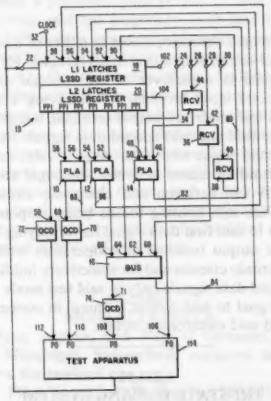
(g) means for transferring said partial sums in synchronism with said control signal from said subtracting means through said multiplex loop to said conference subscriber stations, each conference subscriber station receiving the partial sum comprising the summation of the digitized speech samples generated over one frame by the remaining subscriber stations in the conference call.

4,225,957

TESTING MACROS EMBEDDED IN LSI CHIPS

Charles R. Doty, Jr., Matthews, N.C.; Eugen I. Muehldorf, Potomac, Md., and Himanshu G. Shah, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,891
Int. Cl.[2] G01R *31/28*; G06F *11/00*
U.S. Cl. 371—15 **7 Claims**



3. In an LSI chip having a plurality of PLAs, at least a first PLA having inputs connected to the output of a shift register and the output of the PLA connected to the input of the shift register, the output of the shift register being connected to a testing apparatus external to the chip, the improvement comprising:

at least a second PLA in alternate parallel path relation to said first PLA and having its output connected to at least a first bus, the output of the bus being connected to the testing apparatus;

at least a second bus connected to the output of the shift register;

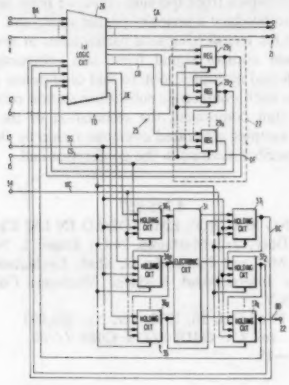
the outputs of the busses being connectable to one another;
control means connected to both said first and second busses for disabling the output of one of the busses to permit the output of the other bus to propagate through to the testing apparatus, and
whereby the PLAs, shift register, and busses are testable in a macro mode.

4,225,958

DEVICE COMPRISING CIRCUITS FOR HOLDING, IN PARTICULAR, A TEST DATA SIGNAL

Shigehiro Funatsu, Tokyo, Japan, assignor to VLSI Technology Research Association, Kawasaki, Japan

Filed Mar. 13, 1979, Ser. No. 20,136
Claims priority, application Japan, Mar. 13, 1978, 53-28972
Int. Cl.³ G01R *31/28*; G06F *11/00*
U.S. Cl. 371—15 **6 Claims**



1. An electronic device operable in either of a normal and a test mode and comprising a first input terminal for receiving a first data signal in whichever of said normal and said test modes, a second input terminal for receiving a second data signal in said test mode, an output terminal, a logic circuit for receiving said first and said second data signals from said first and said second input terminals, respectively, an electronic circuit, and holding means between said logic and said electronic circuits and between said electronic circuit and said output terminal, said holding means being responsive in said normal mode to said first data signal for supplying a third data signal to said output terminal in cooperation with said logic and said electronic circuits and for selectively holding said first and said second data signals only in said test mode to supply a fourth data signal to said output terminal in cooperation with said logic and said electronic circuits.

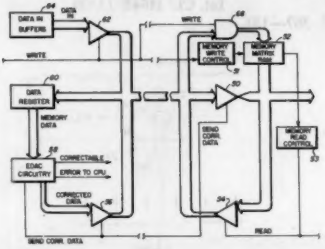
4,225,959

TRI-STATE BUSSING SYSTEM

Robert E. Suelflow, Scottsdale, and Edward M. Drobny, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Aug. 4, 1978, Ser. No. 930,966
Int. Cl.³ G06F *11/08*
U.S. Cl. 371—38 **10 Claims**

1. A bussing apparatus within a data processing system central processor including a memory capable of storing data groups, said apparatus supplying an accurate data group to an instruction buffer comprising:
a first data bus receiving a data group from said memory and coupled to said instruction buffer for supplying said data group thereto;
a first means connected to said first data bus for transferring said data group;
a data register storing said data group from said first means;
a second data bus connected to said first means for supplying said data group to said data register;
an error detection and correction circuitry connected to receive said data group from said data register and producing a corrected data group;



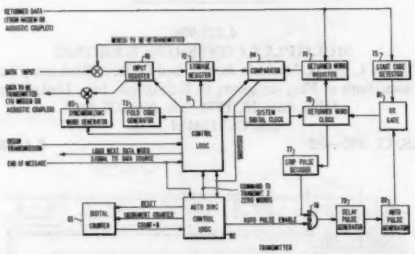
a second means transferring said corrected data group to said second data bus;
a third means connected to transfer said corrected data group from said second data bus to said first data bus whereby said corrected data group is supplied to said instruction buffer from said first data bus.

4,225,960

AUTOMATIC SYNCHRONIZING SYSTEM FOR DIGITAL ASYNCHRONOUS COMMUNICATIONS

Harvey M. Masters, Ellicott City, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1979, Ser. No. 16,670
Int. Cl.² G08C *25/02*
U.S. Cl. 371—47 **8 Claims**



1. A data transmission system including a data origination and a data utilization station and means for maintaining synchronization therebetween when detection of synchronizing codes used in synchronizing said data origination station with said data utilization station is interrupted:
(1) said data origination station comprising;
(a) means for selectively and sequentially accepting digital data from a data source and for transmitting said digital data as a plurality of data words each including a synchronizing code, a field code and a data portion, as a continuous output data stream,
(b) means for temporarily storing a selected number of said data words comprising said output data stream;
(c) means for receiving a return data stream comprising a plurality of data words from said data utilization station,
(d) means for detecting the synchronizing code of each data word comprising said return data stream to generate a pulsed synchronizing signal;

(e) means for generating an auto synchronization signal including a pulse substantially coincident with said synchronizing signal;

(f) means for combining said pulsed synchronization signal with said auto synchronization signal to generate an initiate signal;

(g) means responsive to said initiate signal to produce a multipulse clock signal which shifts the data words comprising said returned data stream into a shift register;

(h) means for selectively comparing data words comprising said returned data stream to said stored data words to generate a compare signal;

(i) means responsive to said compare signal to generate a loss of synchronization signal whenever a predetermined successive number of comparisons indicate that the selected word of said returned path stream is not identical to the word to which it is being compared;

(j) means responsive to said loss of synchronization signal to interrupt said output data stream and insert therein at least one synchronization word, said synchronizing word having all bits the same value except for said synchronization code;

(2) said data utilization station comprising;

(a) means for detecting said synchronization code of each of said data words comprising said output data stream to generate a pulsed synchronization signal,

(b) means for generating an auto synchronization signal including a pulse substantially coincident with said synchronizing signal,

(c) means for combining said pulsed synchronization signal and said auto synchronization signal to generate an initiate signal,

(d) means responsive to said initiate signal to shift a selected number of the data words comprising said output data stream into a memory and for generating said returned data stream,

(e) means responsive to said field code of each of said data words to generate a loss of synchronization signal,

(f) means responsive to said loss of synchronization signal to disable said means for generating an auto synchronization signal and for resynchronizing said data utilization station with said data origination station synchronizing word.

4,225,961

SYSTEM FOR MONITORING THE VALIDITY OF ELECTRICAL DATA FED TO A NUMBER OF N FUNCTIONALLY PARALLEL-CONNECTED DATA CHANNELS

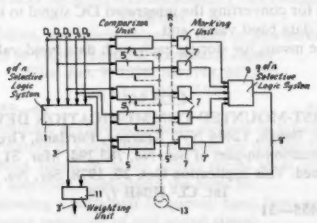
Werner Raggenbass, Schwerzenbach, and Kurt Zwar, Brugg, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 3, 1978, Ser. No. 930,610

Claims priority, application Switzerland, Aug. 9, 1977, 9686/77

Int. Cl.² G06F *11/00*; H03K *13/32*

U.S. Cl. 371—36 **51 Claims**



1. A system for monitoring the validity of electrical data appearing on n functionally parallel-connected data channels according to a fixed criterion, wherein no conclusions are drawn as to the validity of such data if the data on more than m of said n channels are different, at least during a predetermined period of time, from the data on the remaining ones of said n channels, said system comprising, n being an integer greater than one and m being a positive integer less than n:

a first q of n selective logic system, wherein q=n−m, said first selective logic system being adapted to generate a data signal at its output which corresponds to identical data present on at least q of said n channels;

n channel-related comparison elements, each of said comparison elements being for comparing the data appearing on a respective one of said n channels with said data signal generated by said first selective logic system;

n marking units, each of said marking units being associated with a respective one of said comparison elements and being adapted to register the result of the comparison made by its respective comparison element;

a second q of n selective logic system which generates a first signal when the information registered in said marking units indicates that the data on at least q of said n channels are the same as the data signal generated by said first selective logic system and which otherwise generates a second signal; and

means for generating a modulated channel data signal, said modulated channel data signal being applied to said comparison elements;

said marking units, said comparison elements and said second selective logic system cooperating in such a manner that said second selective logic system generates an alternating current signal corresponding to said modulated signal when a q out of n condition exists and a direct-current signal when a q out of n condition does not exist, said modulated signal being applied to said comparison unit as both a data carrier signal and a test frequency signal, each of said marking units being inhibited from outputting a signal representative of said result of said comparison, whenever the associated one of said comparison units fails for at least a predetermined period of time to output a signal having said test frequency, such that whenever an internal fault occurs in any of said marking units or in said second selective logic system, an output signal is produced responsive to the occurrence of said fault by the respective marking unit or second selective logic system which is the same as that produced by said faulty element upon the registration of deviating channel data; said alternating current signal being a signal whose maximum and minimum values are alternately situated above and below a pre-determined signal range, said direct current signal being a signal whose maximum and minimum values are situated symmetrically outside of said signal range if they are situated outside of said range.

4,225,962

MOSAIC PRINTER

Heinrich Meyr, Aachen, Fed. Rep. of Germany, and Claude Georges, Münsingen, Switzerland, assignors to Hasler AG Bern, Bern, Switzerland

Filed Nov. 15, 1978, Ser. No. 960,828

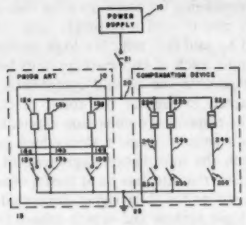
Claims priority, application Switzerland, Nov. 15, 1977, 013906/77

Int. Cl.² H04L *17/20*

U.S. Cl. 375—2 **4 Claims**

1. In a mosaic printer of the type for printing alphanumeric symbols having an integer number n of printing needles driven by separate electromechanical drives through electric lines connected to the input of selection logic having an output connected to the electromechanical drives for selecting the needles to be actuated each print cycle to form the symbols, and having an electrical power source loadable impulsively by said electromechanical drives, the current pulses corresponding to said symbols, the improvement which comprises:

a compensation device having a plurality of compensators and compensator electric lines simulating the electrical characteristics of said electromechanical drives and their said electric lines, said plurality of compensators and compensator electric lines being positioned close to said electromechanical drives and said electric lines, said compensation device also having a compensator selector for selecting which of said plurality of compensators and compensator electric lines are to be energized, connected at the output to said compensator electric lines, said compensator selector having first second and third inputs;



means for switching power from said power source to said compensation device at said first compensator selector input simultaneously with power to said selection logic at said input thereof;

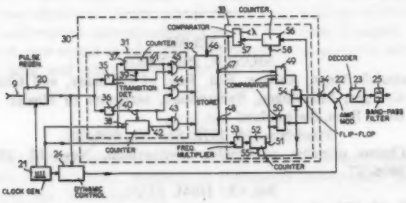
whereby electric impulses in said electromechanical drives and electric lines and in said power source are combined with electric impulses in said compensators and said compensator electric lines and in said power source due to said compensator current loads, thereby eliminating correspondence of the impulsive loads on said power source and radiated pulses in said electromechanical drives and electric lines, to said symbols, maintaining the security of the printed text.

4,225,963

ARRANGEMENT FOR PROCESSING A DELTA MODULATION SIGNAL, IN PARTICULAR FOR DECODING THESE SIGNALS

Gilbert M. M. Ferrieu, Bievres, France, assignor to Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France

Filed Apr. 3, 1978, Ser. No. 892,850
Claims priority, application France, Apr. 4, 1977, 77 10066
Int. Cl.[2] H03K *13/22*
U.S. Cl. 375—28 **6 Claims**



1. A processing device for decoding a digital signal formed from binary elements which occur at the frequency F and are produced by coding an analog signal by means of delta modulation, said device comprising:

a device means for analysing digital signal for successively forming data each representing the number of binary elements of two consecutive trains of different binary elements each of which comprises a binary element or a series of several identical binary elements,

a store in which said data are successively entered,

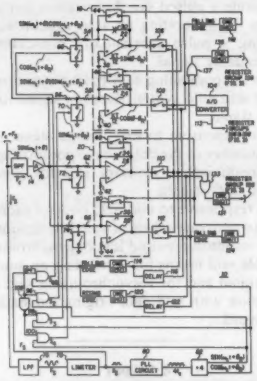
means for forming, on the basis of said data read from the store, a sequence of binary elements, said formed sequence having λ times the two previously recited consecutive trains of binary elements, said formed sequence having a binary element frequency equal to 2λF, wherein λ is an integer exceeding 1, the end of each formed sequence controlling the erasure of the data in the store used to form said sequence, and the reading of the following data.

4,225,964

DETECTION MEANS FOR PROVIDING MULTIPLE BAUD VALUES PER INDIVIDUAL BAUD PERIOD OF A CARRIER SIGNAL TO OBVIATE BAUD TIMING AMBIGUITIES

George C. Cagle, Plano, and Eric K. Weeren, Richardson, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 26, 1979, Ser. No. 15,672
Int. Cl.[3] H04L *27/32*; H03D *3/22*
U.S. Cl. 375—86 **24 Claims**



14. Detection means for detecting digital data borne by a carrier signal via a predetermined variation in some characteristic thereof during each baud period with respect to the same characteristic of a reference signal, comprising:

means for converting the carrier signal characteristic variation to a DC signal indicative of the digital data;

timing means for subdividing each baud period into n plural intervals;

integration means for integrating the DC signal over a baud period beginning with the inception of each of said n intervals;

means for converting the integrated DC signal to its equivalent data baud value, and

storage means for storing each such data baud value.

4,225,965

WRIST-MOUNTED COMMUNICATION DEVICE

Gerald R. Baugh, 12444 NW. Kearney, Portland, Oreg. 97229

Continuation-in-part of Ser. No. 783,294, Mar. 31, 1977, abandoned. This application Oct. 20, 1978, Ser. No. 953,121
Int. Cl.[2] H04B *1/08*
U.S. Cl. 455—31 **2 Claims**

1. Communication apparatus adapted to be worn on the wrist to alert the wearer to a transmitted message, said device, in operative condition, comprising

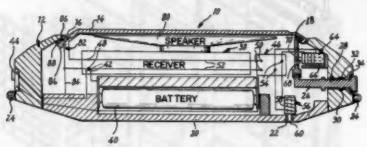
a wrist-mounted housing defining a bore covered by the

wearer's wrist, and including a hinged lid movable between opened and closed positions,

first response means including a probe movably mounted in said housing for movement through said bore, to prod the wearer's wrist,

second response means including a latch arm movable to effect locking and unlocking of said lid, with said lid in its closed position,

an audible alarm device mounted on said housing, said device being exposed and concealed when said lid is in its said opened and closed positions, respectively,



receiver means mounted in said housing, adapted to receive and respond to a transmitted message, and operable, with receipt of such a message, to produce a response signal, and

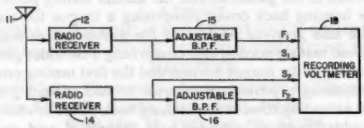
control means operatively connecting said receiver means and each of said first and second response means, to produce movement in each of the latter with production by said receiver means of a response signal, thereby to produce probe movement, and lid unlocking, respectively.

4,225,966

POWER AREA COLLOCATION OF TRANSMITTERS

Thomas C. Blow, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 6, 1970, Ser. No. 78,617
Int. Cl.[3] G01R 25/00
U.S. Cl. 455—67 **8 Claims**



1. A method of collocating transmitters comprising the steps of:

detecting at least two transmitted signals, the signals having ripple frequency components; and

comparing the ripple frequency components of the signals to collocate the transmitters.

4,225,967

BROADCAST ACKNOWLEDGEMENT METHOD AND SYSTEM

Hirohide Miwa, and Eiichi Shiratori, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 9, 1978, Ser. No. 867,883
Int. Cl.[3] H04N 7/06
U.S. Cl. 455—68 **24 Claims**

1. A broadcast acknowledgement method in which broadcast data relative to a broadcast program are transmitted along with a sound signal of given sound signal level and given frequency spectrum, comprising the steps of:

(a) eliminating a particular frequency band from said given frequency spectrum of said sound signal;

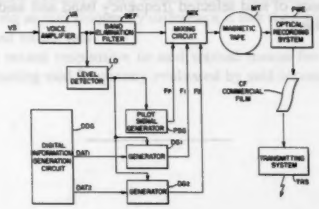
(b) generating, in accordance with said broadcast acknowledgement data, a desired number of frequency signals having frequencies (F_1, F_2 . . .) within said eliminated particular frequency band;

(c) generating a reference signal having a frequency (F_p) within said eliminated particular frequency band;

(d) superimposing simultaneously said frequency signals and said reference frequency signal onto said sound signal to provide a communication signal for transmission;

(e) transmitting said communication signal;

(f) receiving said communication signal;



(g) filtering said received communication signal to extract signals having frequencies within said eliminated particular frequency band;

(h) generating a squared signal having frequency components $|F_1-F_p|$, $|F_2-F_p|$, . . . by squaring said filtered signals; and

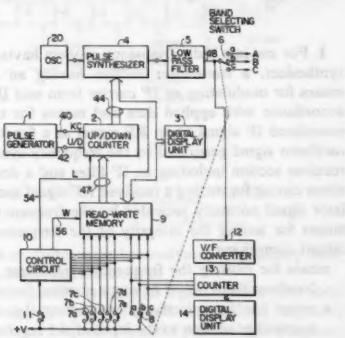
(i) filtering said squared signal to extract signals having respective frequency components $|F_1-F_p|$, $|F_2-F_p|$, . . . , whereby to obtain said broadcast data.

4,225,968

ELECTRONIC TUNING TYPE RECEIVER HAVING A BAND DISPLAY AND NUMERICAL FREQUENCY DISPLAY

Masanao Okatani; Hiroshi Onishi; Yoshiaki Ishibashi; Reisuke Sato; Hisashi Suganuma; Tomohisa Yokogawa; Yoshiharu Ueki; Haruo Kama, all of Kawagoe; Tadashi Kosuga, and Tadashi Ogawa, both of Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 4, 1978, Ser. No. 931,222
Claims priority, application Japan, Aug. 8, 1977, 52-94749
Int. Cl.[2] H04B 1/16
U.S. Cl. 455—154 **16 Claims**



1. In an electronic tuning type receiver including a digitally controlled preset tuning system, in which a digital signal for a band and a channel selection are supplied from a counter means having a plurality of stages to a digital-to-analog converter so as to obtain a D.C. voltage signal corresponding to said digital signal, said D.C. voltage being applied to a tuning means of said receiver to select a desired frequency band and to tune to a desired channel frequency within said desired frequency band, the improvement comprising:

first display means responsive to said digital signal for visu-

ally displaying the relative position of said channel frequency being received with respect to said desired frequency band;

counter means responsive to said tuning means for providing a count signal in accordance with said selected frequency band and said selected channel frequency; and

second display means responsive to said count signal for visually displaying numerically the sum total of said frequency of said selected frequency band and said selected channel.

4,225,969

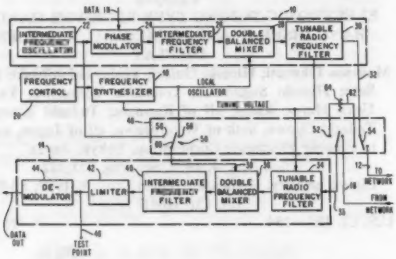
METHOD AND APPARATUS FOR TESTING A FREQUENCY SYNTHESIZER IN AN RF MODEM

Ju H. J. Hong, Raleigh, S.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1979, Ser. No. 8,008

Int. Cl.[3] H04B *17/00*

U.S. Cl. 455—67 **4 Claims**



1. For use in a radio frequency modem having a frequency synthesizer, a transmitter section having an IF oscillator, means for modulating an IF carrier from said IF oscillator in accordance with applied data and means for translating the modulated IF signal to an RF signal as a function of a local oscillator signal generated by the frequency synthesizer and a receiver section including an IF filter and a double balanced mixer circuit for mixing a received RF signal and a local oscillator signal normally provided by the frequency synthesizer, means for testing the integrity of the frequency synthesizer output comprising:

means for causing the frequency synthesizer to produce a local oscillator signal having a nominal frequency of 3 IF;

a wrap line for selectively connecting the output of the transmitter section to the input of the receiver section for supplying the RF signal to the receiver input section;

means for selectively isolating the mixer circuit in the receiver from the local oscillator output of the frequency synthesizer and for supplying the transmitter section IF carrier signal as a local oscillator input to the mixer circuit, said mixer circuit internally producing a strong harmonic at $\pm 3\times$ the local oscillator input supplied by the transmitter section IF carrier signal, which harmonic is mixed with the applied RF signal to produce a signal having an IF component when the nominal output of the frequency synthesizer is actually equal to 3 IF.

4,225,970

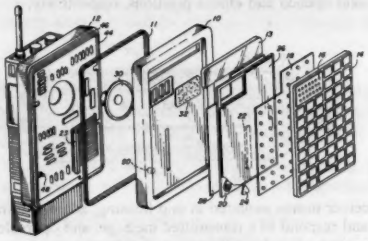
SPLASH PROOF PORTABLE TWO-WAY DATA TERMINAL/RADIO

Giovanni Jaramillo, Plantation; Melvin Teitzman, Lauderhill, and Richard D. Lipinski, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 24, 1978, Ser. No. 963,593

Int. Cl.[3] H01B *1/38*

U.S. Cl. 455—89 **5 Claims**



1. A splashproof housing assembly for a portable two-way data terminal/radio combination comprising in combination:

a housing front cover having a first mating portion;

a housing back cover having a second mating portion, the entire area of the second mating portion being juxtaposed with the first mating portion when the housing is fully assembled;

highly resilient gasket means for being retained between said first and second mating portions, and having in cross section a body portion with a grooved portion and a tongue portion;

and wherein the first mating portion of the housing front cover comprise a first groove for aligning and retaining the tongue portion of the gasket means, and a second groove for retaining the body portion of the gasket means, said second groove being slightly wider than the body portion of the gasket means, the second mating portion of the housing back cover comprising a tongue for mating with said grooved portion of the gasket means and the second mating portion also comprising a shoulder portion exterior to the tongue portion and the first mating portion comprising a projection exterior to said second groove and extending toward the housing back cover to abut said shoulder portion, allowing said tongue of said second mating portion to compress said gasket means to cause said gasket means to fill the width of the second groove of the housing front cover while preventing the application of damaging pressure on said gasket means.

4,225,971

TUNING APPARATUS FOR PROVIDING TUNING INDICATION

Hajime Shichijo, Fugisawa, and Yutaka Miyasaka, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

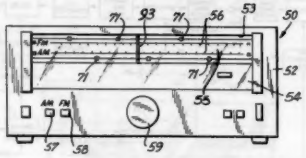
Filed Dec. 29, 1978, Ser. No. 974,229

Claims priority, application Japan, Dec. 29, 1977, 52-158865; Jan. 31, 1978, 53-9782

Int. Cl.[2] H04B *1/06*; H03J *5/10*

U.S. Cl. 455—155 **19 Claims**

1. Tuning apparatus, tunable to different broadcast frequencies for receiving signal information contained therein, comprising a scale provided with indicia corresponding to said broadcast frequencies; pointer means movable across said scale to indicate the particular broadcast frequency to which said tuning apparatus is tuned; movable support means for supporting said pointer means and for moving said pointer means across said scale; a plurality of marking means, each being settable to a desired position along said scale to represent a particular broadcast frequency to which said tuning apparatus

is tunable; first guide means for guiding said support means; second guide means for guiding said marking means, said marking means being slidable on said second guide means; key means movable with said support means on said first guide means and selectively operative to engage a desired one of said marking means to move the engaged marking means therewith as said support means is set to a desired position by reason of said engagement with said key means; tuning circuitry having

a controllable oscillator for generating an oscillating signal whose frequency is variable and determinative of the broadcast frequency to which said tuning apparatus is tuned, said tuning circuitry producing an output representing received signal information, and means for enabling said tuning circuitry to produce said output when said support means is moved into an aligned relationship with a respective one of said marking means.

4,225,972

SYSTEM FOR INDICATING FREQUENCY OF STATION SIGNAL RECEIVED BY SUPERHETERODYNE RADIO RECEIVER

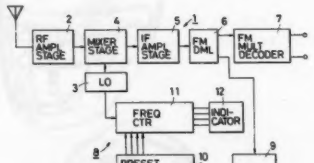
Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 29, 1979, Ser. No. 42,780

Claims priority, application Japan, May 30, 1978, 53-64610; May 30, 1978, 53-64611

Int. Cl.³ H04B *1/16;* G01R *23/10*

U.S. Cl. 455—158 **17 Claims**



1. A system for indicating the frequency of a station signal received by a superheterodyne radio receiver, comprising:

first means associated with said receiver for producing a signal representing a difference between a tuning frequency of said receiver and the frequency of a station signal received by said receiver;

second means for evaluating the frequency of said station-signal frequency received on the basis of an oscillating frequency of a local oscillator included in said receiver;

third means for controlling the evaluation carried out by said second means in accordance with said signal produced by said first means, whereby said second means is effective to evaluate correctly said station-signal frequency received so long as said frequency difference is less than a predetermined value; and

fourth means responsive to said second means for visually indicating said frequency evaluated by said second means.

4,225,973

Patent Not Issued For This Number

4,225,974

DOUBLE SUPER-HETERODYNE RECEIVER

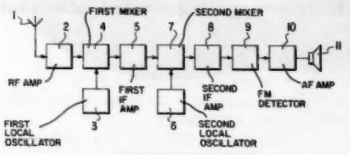
Yukihiko Miyamoto, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

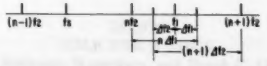
Filed Oct. 27, 1977, Ser. No. 846,104

Claims priority, application Japan, Feb. 14, 1977, 52-14803

Int. Cl.² H04B *1/26*

U.S. Cl. 455—207 **9 Claims**





1. A method of double superheterodyning a frequency modulated signal comprising the steps of

mixing the frequency modulated signal with a first local oscillator signal to provide a first intermediate frequency signal having a frequency f_1 and a positive side frequency deviation of $+\Delta f_1$ and a negative side frequency deviation of $-\Delta f_2$ where $\Delta f_1 = \Delta f_2$, and then

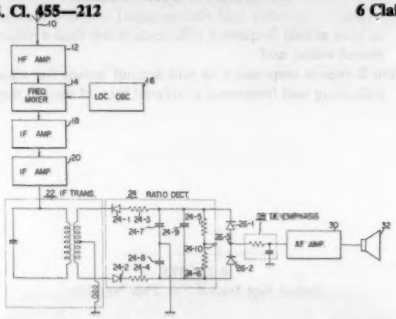
mixing the first intermediate frequency signal with a second local oscillator signal having a frequency f_s less than f_1 to provide a second intermediate frequency signal having a frequency of f_2 and harmonics nf_2 and $(n+1)f_2$ where the relationship between f_1 and f_2 is such that n is a positive integer indicating the harmonic of f_2, nf_2, in the lower side of f_1 which substantially deviates to $f_1+\Delta f_1$ and $n+1$ indicates the harmonic of f_2, $(n+1)f_2$, in the upper side of f_1 which substantially deviates to $f_1-\Delta f_2$.

4,225,975

NOISE SUPPRESSION CIRCUIT FOR USE WITH FM RECEIVER

Yasuo Iwamoto, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1977, Ser. No. 831,676
Claims priority, application Japan, Sep. 14, 1976, 51/110566
Int. Cl.[2] H03D 3/08; H04B 1/10
U.S. Cl. 455—212 6 Claims



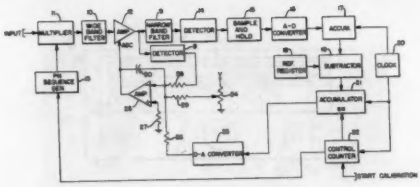
1. A noise suppression circuit for use with an FM receiver comprising a ratio detector, a series combination formed of a plurality of semiconductor rectifier elements interconnected with the same polarity and having a central junction, each of said semiconductor rectifier elements having nonlinear forward characteristics, said series combination being connected to said ratio detector in a forward direction relative to the detected DC output therefrom to form a DC load circuit for the latter, and means for taking an audio signal from said central junction of said series combination, whereby said semiconductor rectifier elements become conducting when said detected DC output from said ratio detector exceeds a predetermined level thereby providing an audio signal from said central junction.

4,225,976

PRE-CALIBRATION OF GAIN CONTROL CIRCUIT IN SPREAD-SPECTRUM DEMODULATOR

William P. Osborne, Melbourne; William F. Hartman, Palm Bay, and Luther L. Crabtree, Melbourne, all of Fla., assignors to Harris Corporation, Cleveland, Ohio

Filed Feb. 28, 1978, Ser. No. 882,015
Int. Cl.[2] H04B 17/00
U.S. Cl. 455—226 22 Claims



1. In a receiver system having an automatic gain control feedback loop for controlling the gain of a received signal amplifier, a system for calibrating the operation of said gain control feedback loop comprising:

first means for monitoring the output of said received signal amplifier during receiver operation in the presence of a prescribed noise input; and

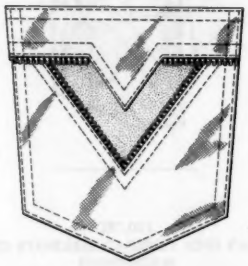
second means, coupled to said first means and to said received signal amplifier, for comparing the monitored output of said received signal amplifier with a prescribed reference that is independent of the contents of the output of said received signal amplifer and adjusting the operation of said feedback loop in accordance with the deviation of said monitored output relative to said reference, and wherein

said second means includes means for accumulating the deviation of said monitored output relative to said reference for a prescribed interval of time and adjusting the operation of said feedback loop in accordance with the accumulated deviation.

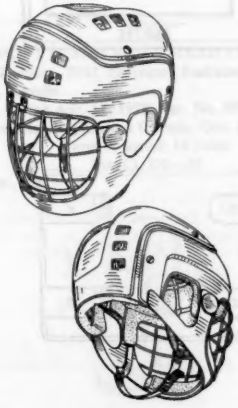
DESIGNS

SEPTEMBER 30, 1980

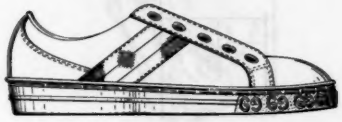
257,072
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Jun. 6, 1978, Ser. No. 913,251
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—25



257,073
SPORTS HELMET
David C. Jenkins, Toronto, Canada, assignor to Cooper Canada Limited
Filed Apr. 2, 1979, Ser. No. 25,839
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—232

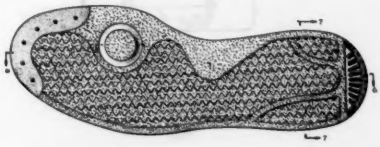


257,074
SNEAKER
Aldo Gucci, 1473 N. Ocean Blvd., Palm Beach, Fla. 33480
Filed Oct. 17, 1978, Ser. No. 952,043
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



257,075
SOLE FOR A SHOE
Anthony V. Amicone, Waterbury, and Frank C. Cesare, Woodbury, both of Conn., assignors to The Keds Corporation, Cambridge, Mass.
Filed Oct. 12, 1978, Ser. No. 950,928
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

257,076
SOLE FOR A SHOE
Anthony V. Amicone, Waterbury, and Frank C. Cesare, Woodbury, both of Conn., assignors to The Keds Corporation, Cambridge, Mass.
Filed Oct. 12, 1978, Ser. No. 950,938
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

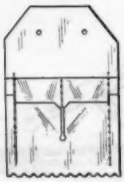


257,077

COMBINED GOLF TEE AND BALL MARKER HOLDER

Robert A. Winbauer, 301 NW. 35 Ct. Apt. 10, Pompano Beach, Fla. 33064

Filed Mar. 17, 1978, Ser. No. 887,642
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400

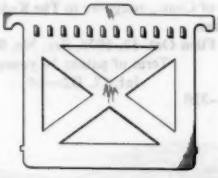


257,078

SEWING FLOSS HOLDER

Adrian L. DeNardo, and Judy V. DeNardo, both of 5360 Gander Rd. West, Dayton, Ohio 45424

Filed Jan. 10, 1979, Ser. No. 2,406
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D3—23



257,079

CAMERA HOLSTER

James R. Globus, Los Angeles, Calif., assignor to C.K.G. Products Corporation, Los Angeles, Calif.

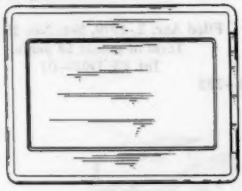
Filed Sep. 11, 1978, Ser. No. 941,723
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

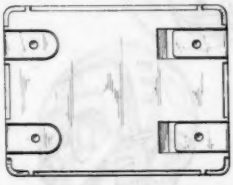
257,080

TAPE CASSETTE MAILING CASE

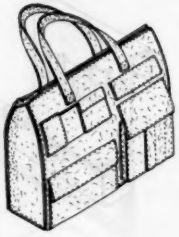
Harald Schmidt, Kings Park, N.Y., assignor to Hansa Plastics Inc., Kings Park, N.Y.

Filed Jun. 21, 1978, Ser. No. 917,521
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35

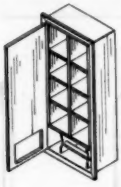




257,081
LADIES HANDBAG
Gary Stern, Brigantine, N.J., assignor to Spencer Gifts, Inc., Atlantic City, N.J.
Filed Oct. 2, 1978, Ser. No. 948,052
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48



257,082
COMBINED STORAGE CABINET AND PAPER ROLL DISPENSER
James A. Williams, 4120 Morning Pl., Sarasota, Fla. 33581
Filed Jun. 4, 1979, Ser. No. 45,253
Term of patent 14 years
Int. Cl. D23—*02*; D6—*04*
U.S. Cl. D6—97



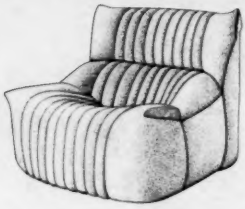
257,083
SUPPORT STAND FOR A HEAD PHONE SET
Colin E. Gauthier, 3002 Eastview, Saskatoon, Saskatchewan, S7J 2J1, Canada
Filed Apr. 17, 1978, Ser. No. 897,529
Claims priority, application Canada, Oct. 31, 1977, 3110772
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—20

257,084
LINER FOR AN INFANT'S SEAT
Charles R. Fuller, and John P. Fuller, both of 15164 Stagg St., Van Nuys, Calif. 91405
Filed Aug. 22, 1978, Ser. No. 936,257
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48

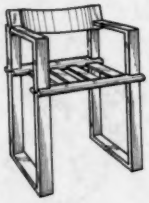
257,085
LINER FOR A SEAT
Charles R. Fuller, and John P. Fuller, both of 15164 Stagg St., Van Nuys, Calif. 91405
Filed Aug. 22, 1978, Ser. No. 936,258
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48

257,086
LINER FOR A CAR SEAT
Charles R. Fuller, and John P. Fuller, both of 15164 Stagg St., Van Nuys, Calif. 91405
Filed Aug. 22, 1978, Ser. No. 936,259
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48

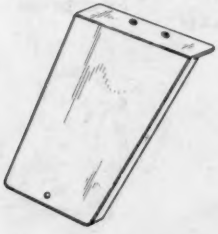
257,087
CHAIR OR SIMILAR ARTICLE
Pierre E. C. Roset, Montagnieu, France, assignor to Roset S.A. Geneve, Geneva, Switzerland
Filed Jul. 28, 1978, Ser. No. 929,209
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—67



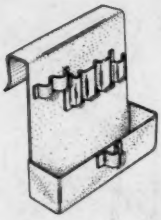
257,088
CHAIR
Paul Guetat, Lyons, France, assignor to Societe Majolane du Meuble S.A., Meyzieu, France
Filed Apr. 21, 1978, Ser. No. 899,030
Claims priority, application France, Jan. 11, 1978, 78 283
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



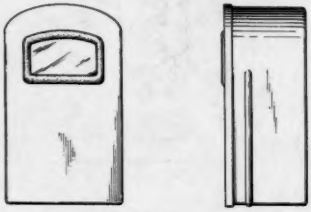
257,089
BACKREST FOR USE IN A BATHTUB
F. Milo Douglas, P.O. Box 321, Lethbridge, Alberta, Canada
Filed Mar. 21, 1978, Ser. No. 888,761
Claims priority, application Canada, Sep. 26, 1977, 2609773
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86



257,090
TOOL HOLDER
Halm C. King, Jr., P.O. Box 149, Del Rio, Tex. 78840
Filed Sep. 20, 1978, Ser. No. 943,924
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—125

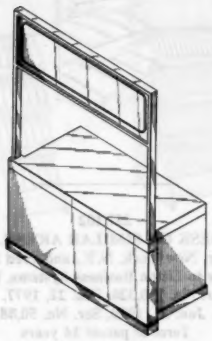


257,091
STORAGE CABINET FOR SAFETY EQUIPMENT OR THE LIKE
William D. Crosbie, Sr., 5966 Satinwood Dr., Baton Rouge, La. 70812
Filed Dec. 22, 1978, Ser. No. 973,231
Term of patent 14 years
Int. Cl. D6—*04*; D29—*01*
U.S. Cl. D6—127



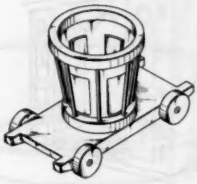
257,092
WALL MOUNTED MULTIPLE DESK UNIT
James S. Berman, New York, and Sigurd Stegmaier, Malverne, both of N.Y., assignors to Citibank, N.A., New York, N.Y.
Filed Feb. 7, 1978, Ser. No. 875,941
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—128

257,093
SNACK BAR OR SIMILAR ARTICLE
Frank W. Brittner, Pittsburgh, Pa., assignor to J & J Snack Foods Corp., Pennsauken, N.J.
Filed Aug. 11, 1978, Ser. No. 933,251
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—144

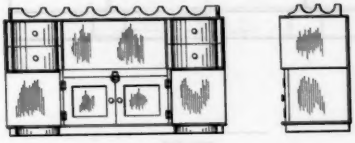


257,094
COMBINED CHEST AND BOOKCASE UNIT OR THE LIKE
Harold V. Aulbert, High Point, N.C., assignor to Vaughan Furniture Company, Galax, Va.
Filed Apr. 3, 1978, Ser. No. 893,128
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153

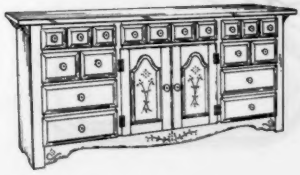
257,095
FLOWER POT STAND
Meng-Hsiung Lin, Taipei, Taiwan, assignor to First Novelty Co., Ltd., Taipei, Taiwan
Filed Apr. 25, 1978, Ser. No. 899,932
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*; D21—*01*
U.S. Cl. D6—153



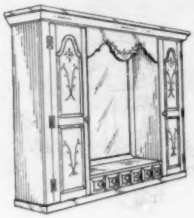
257,096
STEREO CABINET
James E. Lee, Rte. 8, Leon Dr., Anderson, S.C. 29621
Filed Jun. 21, 1978, Ser. No. 917,540
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



257,097
BUFFET
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, Catawba County, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,203
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154

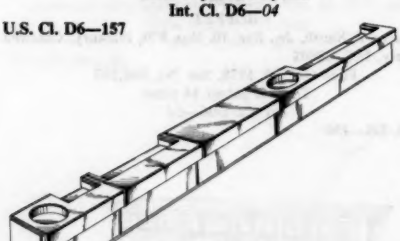


257,098
HUTCH
Melbourne F. Smith, Jr., Rte. 10, Box 879, Hickory, Catawba County, N.C. 28601
Filed Oct. 30, 1978, Ser. No. 956,213
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—154



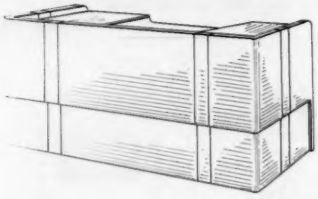
257,099
MULTIPLE TELLER COUNTER UNIT
James S. Berman, New York, and Sigurd Stegmaier, Malverne, both of N.Y., assignors to Citibank, N.A., New York, N.Y.
Filed Feb. 7, 1978, Ser. No. 875,944
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—157

257,100
MULTIPLE POSITION COUNTER UNIT
James S. Berman, New York, and Sigurd Stegmaier, Malverne, both of N.Y., assignors to Citibank, N.A., New York, N.Y.
Filed Feb. 7, 1978, Ser. No. 875,952
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—157

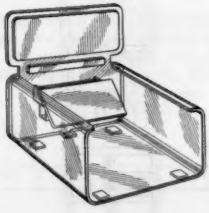


257,101
COMBINED STORAGE AND DISPLAY UNIT
Albert E. Peterson, Maple Plain, and Dennis C. Crowe, Eden Prairie, both of Minn., assignors to National Tea Company
Filed Mar. 9, 1979, Ser. No. 19,010
Term of patent 14 years
Int. Cl. D6—*04*; D20—*02*
U.S. Cl. D6—157

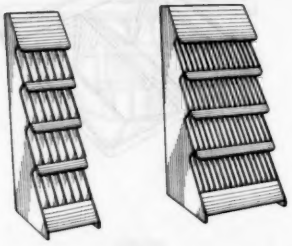
257,102
DESK OR SIMILAR ARTICLE
Lawrence Lerner, New York, N.Y., and Fred Schmitt, Nutley, N.J., assignors to Litton Business Systems, Inc.
Division of Ser. No. 770,328, Feb. 22, 1977. This application Jun. 21, 1979, Ser. No. 50,882
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—161



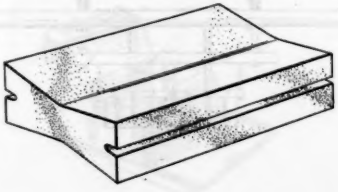
257,103
COMBINED COMPUTER TERMINAL SUPPORT AND ATTACHMENTS FOR WRITTEN INSTRUCTIONS
John M. McKeown, Jr., Encinitas, Calif., assignor to San Diego Federal Savings and Loan Association
Filed Dec. 2, 1977, Ser. No. 856,797
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—184



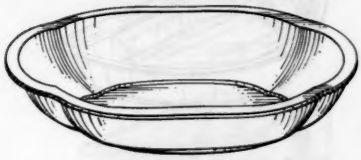
257,104
DISPLAY STAND
R. J. H. Fortuin, Rembrandtkade 191, Deventer, Netherlands
Filed Aug. 17, 1977, Ser. No. 825,219
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—189

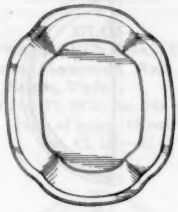


257,105
PILLOW INSERT
Frank L. A. Morris, 4 Mount Ave., New Milton, Hampshire, England
Filed Jun. 12, 1978, Ser. No. 915,075
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

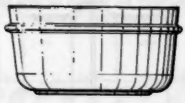


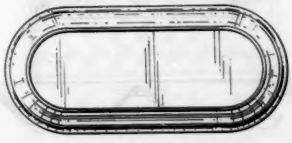
257,106
SERVING BOWL
Maurice G. Boaler, "Patricroft", 14 Cavendish Rd., Barnsley, England
Filed Nov. 15, 1977, Ser. No. 851,762
Claims priority, application United Kingdom, Jun. 22, 1977, 980505/77
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—1



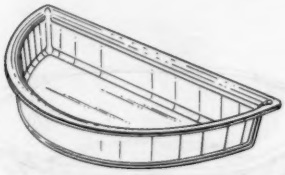


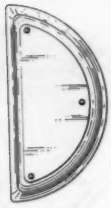
257,107
FOOD CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, and Pieter K. J. De Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Mar. 12, 1979, Ser. No. 19,962
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—1



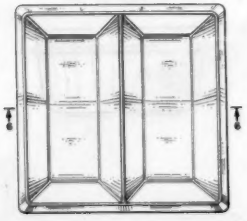


257,108
DISH OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 23, 1979, Ser. No. 32,066
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—1

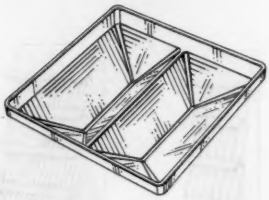




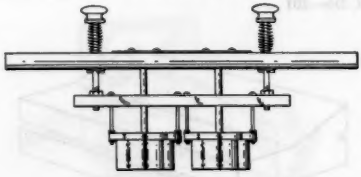
257,109
COMPARTMENTED SERVING TRAY OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Feb. 12, 1979, Ser. No. 11,246
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—38



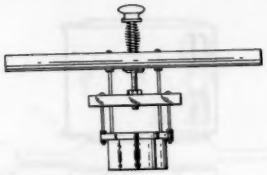
257,110
COMPARTMENTED DISH OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Feb. 12, 1979, Ser. No. 11,249
Term of patent 14 years
Int. Cl. D07—*01, 99*
U.S. Cl. D7—38



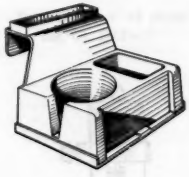
257,111
ROSETTE IRON
Michael J. Sommerfeld, 1126 Dennis St., Chippewa Falls, Wis. 54729
Filed Sep. 20, 1978, Ser. No. 945,175
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43

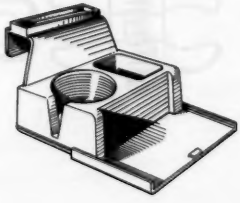


257,112
ROSETTE IRON
Michael J. Sommerfeld, 1126 Dennis St., Chippewa Falls, Wis. 54729
Filed Sep. 20, 1978, Ser. No. 945,177
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43

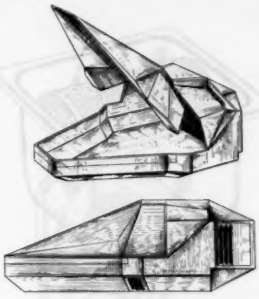


257,113
FOOD AND BEVERAGE CADDY
James A. McCaffrey, Norcross, Ga., assignor to Diversified Plastics Products Inc., Norcross, Ga.
Filed Jan. 17, 1979, Ser. No. 4,064
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—70

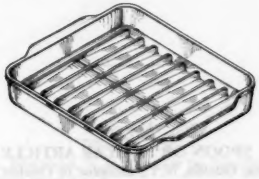




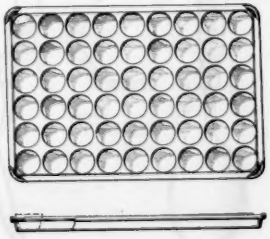
257,114
LUNCH BOX
Thomas A. Baird, 3580 W. Loma Linda, Fresno, Calif. 93711
Filed Nov. 29, 1978, Ser. No. 964,599
Term of patent 7 years
Int. Cl. D07—*07*; D03—*01*
U.S. Cl. D7—76



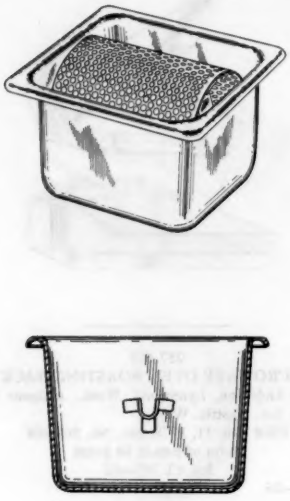
257,115
MICROWAVE OVEN ROASTING RACK
William M. Anderson, Lynnwood, Wash., assignor to AMG Industries, Inc., Seattle, Wash.
Filed Jan. 11, 1978, Ser. No. 868,669
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—85



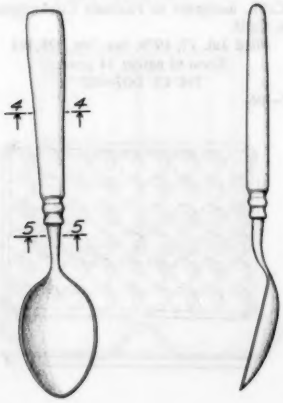
257,116
BAKER'S MUFFIN TRAY
Charles Lakatos, San Francisco, and Nina E. Weil, El Granada, both of Calif., assignors to Fantasia Confections, Inc., San Francisco, Calif.
Filed Jul. 17, 1978, Ser. No. 925,392
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—96



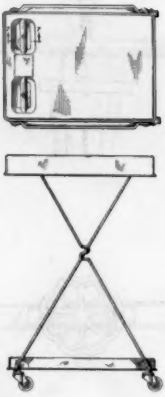
257,117
BUTTER SPREADER
Gertrude Steiner, Lincolnwood, Ill., assignor to Filtron Company, Inc., Chicago, Ill.
Filed Sep. 14, 1977, Ser. No. 833,392
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—99



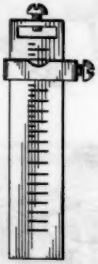
257,118
SPOON OR SIMILAR ARTICLE
Melvin A. Lea, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 23, 1979, Ser. No. 32,722
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



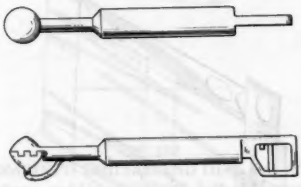
257,119
HAMPER FRAME
Paul Bogner, 8952 Faust Cir., Huntington Beach, Calif. 92646
Filed Mar. 30, 1978, Ser. No. 891,934
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—189



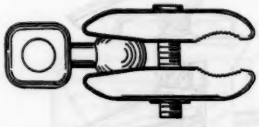
257,120
BORDER GAUGE FOR SWIVEL KNIFE
Charles K. Wheat, NW. 447 Sheafman Creek Rd., Hamilton, Mich. 59840
Filed Oct. 31, 1975, Ser. No. 627,537
The portion of the term of this patent subsequent to Jul. 30, 1994, has been disclaimed.
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



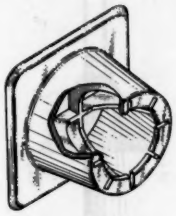
257,121
IMPROVED PLUMBING TOOL
Edmond Stringer, 3470 Day Ave., Coconut Grove, Fla. 33133
Filed Aug. 4, 1977, Ser. No. 821,649
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



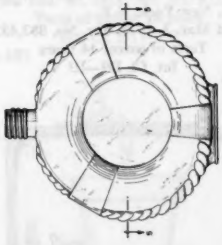
257,122
MOUNTING BRACKET FOR A MOTORCYCLE ACCESSORY
Clifford D. Price, Birmingham, England, assignor to Lucas Electrical Limited, Birmingham, England
Filed Aug. 2, 1978, Ser. No. 930,323
Claims priority, application United Kingdom, Feb. 16, 1978, 983341/78
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D8—396



257,123
DOOR STOP
Douglas B. Farmer, Jr., 2077 Junipero St., Long Beach, Calif.
Filed Sep. 18, 1978, Ser. No. 943,431
Term of patent 14 years
Int. Cl. D8—*09, 99*
U.S. Cl. D8—402

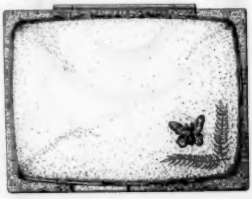


257,124
DECANTER
John A. Grip, Matawan, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 600,707, Jul. 31, 1975, abandoned. This application Oct. 18, 1977, Ser. No. 843,107
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—23

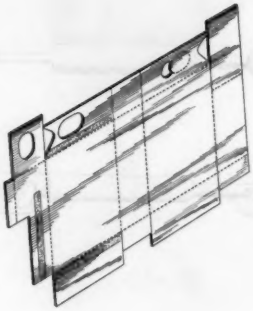


257,125
BOTTLE
Luigi A. G. Smali, 1201 Steeles Ave. West, Suite 1203, Willowdale, Ontario, Canada
Filed Aug. 22, 1977, Ser. No. 826,890
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—129

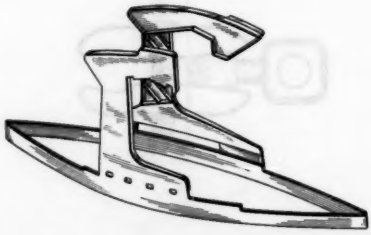
257,126
PHARMACEUTICAL DISPENSING CONTAINER OR THE LIKE
Edward J. Johnson, Furlong, Pa., assignor to American Home Products Corp., New York, N.Y.
Filed Mar. 3, 1978, Ser. No. 883,432
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



257,127
SLIDE TOP DISPENSER CARTON BLANK
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Mar. 29, 1978, Ser. No. 891,476
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—245



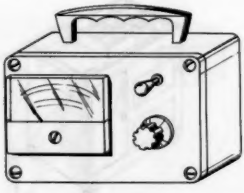
257,128
HANDLE FOR A CARRY BAG
Jorn P. Houlberg, Copenhagen, Denmark, assignor to Internationale Finanz-, Gewerbe- und Handels-Anstalt, Vaduz, Liechtenstein
Filed Jul. 5, 1978, Ser. No. 922,115
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—292



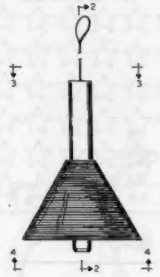
257,129
CLOCK
Ellworth R. Danz, La Salle, Ill., assignor to General Time Corporation
Filed Feb. 10, 1978, Ser. No. 876,858
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—23

257,130
COMBINED DIGITAL AND DIAL CALIPER
Kozo Sibukawa, and Goro Nishikata, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Feb. 5, 1979, Ser. No. 9,547
Claims priority, application Japan, Aug. 7, 1977, 53-33121
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—73

257,131
CORROSION TEST METER
Robert W. Ajeman, 6801 Dove St., Ventura, Calif. 93003
Filed Jan. 8, 1979, Ser. No. 2,012
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81



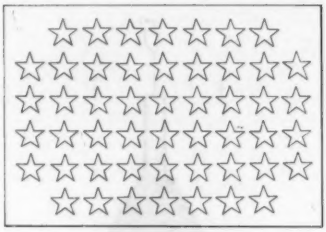
257,132
WHEEL BALANCER
Walter Schramm, 17 Darcy St. Shamrock, Santa Rosa, Calif. 95401
Filed Sep. 5, 1978, Ser. No. 939,904
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—82



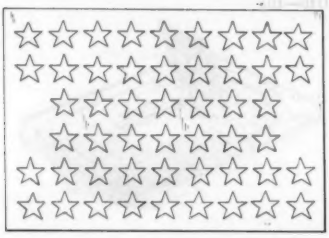
257,133
LID
Robert M. McKinnon, P.O. Box 648, Bedford, Tex. 76021
Filed Jan. 15, 1979, Ser. No. 3,583
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—103

257,134
NOVELTY SCULPTURE
Terence M. Tumbrink, 1468 Eagle Ridge Rd., Glencoe, Mo. 63038, and William Punshon, 1432 Sunnytree La., Ballwin, Mo. 63011
Filed Dec. 26, 1978, Ser. No. 972,677
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

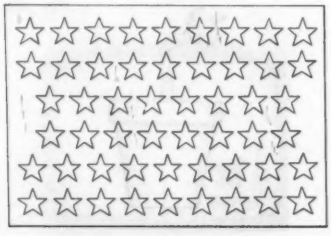
257,135
50 STAR FLAG
Charles P. Carr, 16103 Sanford Ave., Flushing, N.Y. 11358
Filed Oct. 16, 1978, Ser. No. 951,662
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—179



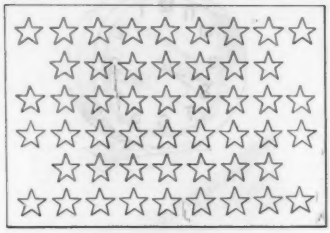
257,136
50 STAR FLAG
Charles P. Carr, 16103 Sanford Ave., Flushing, N.Y. 11358
Filed Oct. 16, 1978, Ser. No. 951,663
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—179



257,137
52 STAR FLAG
Charles P. Carr, 16103 Sanford Ave., Flushing, N.Y. 11358
Filed Oct. 16, 1978, Ser. No. 951,666
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—179

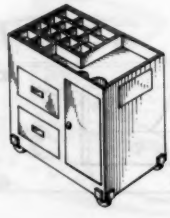


257,138
50 STAR FLAG
Charles P. Carr, 16103 Sanford Ave., Flushing, N.Y. 11358
Filed Oct. 16, 1978, Ser. No. 951,668
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—179

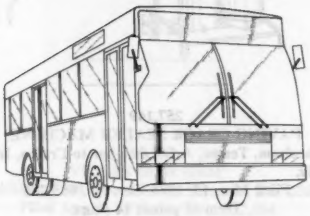


257,139
MOBILE PAPER CARRIER
David Bigge, Chicago, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Aug. 28, 1978, Ser. No. 937,264
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—25

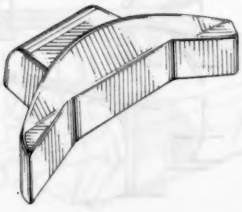
257,140
BLOOD SPECIMEN SUPPLY CART
Pauline I. Groseclose, 611 E. Bonds St., Carson, Calif. 90749
Filed Jul. 3, 1978, Ser. No. 921,350
Term of patent 14 years
Int. Cl. D12—*02*; D24—*99*
U.S. Cl. D12—28



257,141
BUS
Klaus Flesche, Schlangenbad, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 23, 1978, Ser. No. 871,769
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—84



257,142
MOTORCYCLE ACCESSORY CONSOLE
Tommy W. Dixson, 1509 W. Willetta, Phoenix, Ariz. 85007
Filed Jan. 2, 1979, Ser. No. 294
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



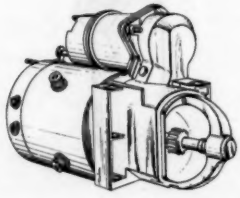
257,143
BRAKE BRACKET FOR BICYCLES
Rene Lauzier, Ruy, France, assignor to Angenieux-CLB S.A., Saint-Etienne, France
Filed Apr. 14, 1978, Ser. No. 896,629
Claims priority, application France, Oct. 26, 1977, 77 2156
The portion of the term of this patent subsequent to Aug. 2, 1991, has been disclaimed.
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—179

257,144
MICROPHONE
Michael J. McGourty, Littleport, England, assignor to Pye (Electronics Products) Limited, Cambridge, England
Filed Apr. 3, 1978, Ser. No. 893,183
Claims priority, application United Kingdom, Oct. 12, 1977, 981879/77
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—12

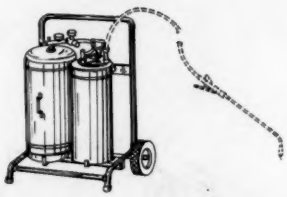
257,145
WORD PROCESSOR
Kohichi Soda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Apr. 25, 1978, Ser. No. 899,885
Claims priority, application Japan, Dec. 16, 1977, 52-49550
Term of patent 3½ years
Int. Cl. D14—*02*
U.S. Cl. D14—44

257,146
MICRO COMPUTER
James C. Valestin, Kirkwood, Mo., assignor to Gateway Systems Corporation, St. Louis, Mo.
Filed Nov. 23, 1977, Ser. No. 854,365
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—45

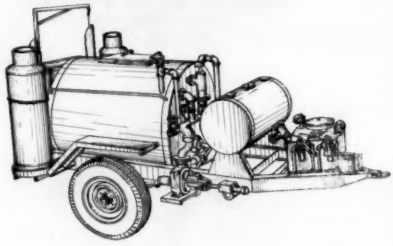
257,147
AUTOMOBILE STARTER HOUSING
Donald G. Mescheder, 21202 Berendo Ave., Torrance, Calif. 90502
Filed Apr. 24, 1978, Ser. No. 899,382
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



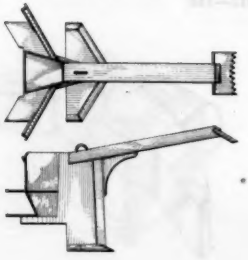
257,148
PORTABLE SPRAYER
Marvin A. Morford, 1815 Ashworth Rd., West Des Moines, Iowa 50265
Filed May 30, 1978, Ser. No. 910,594
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—13



257,149
PAVING CRACK SEALER MACHINE
Carl C. Jacobson, Tempe, Ariz., assignor to Crafco, Inc., Phoenix, Ariz.
Filed Mar. 13, 1978, Ser. No. 885,786
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—27

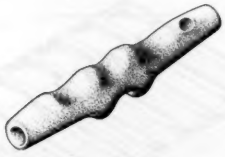


257,150
TREE CUTTER ATTACHMENT FOR A TRACTOR OR LIKE APPARATUS
Harold G. Britton, R.R. 6, Newton, Ill. 62448
Filed Dec. 14, 1977, Ser. No. 861,025
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28

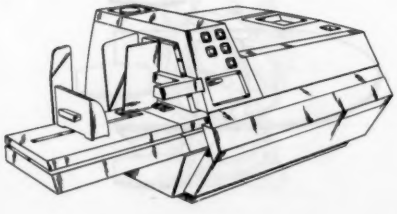


257,151
GUITAR PICK
Ray W. Burke, 106 Botsford St., Poland, Ohio 44514
Filed Jun. 22, 1978, Ser. No. 918,316
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

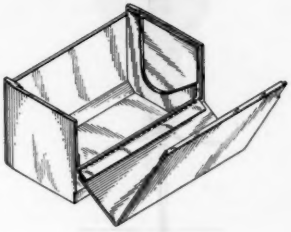
257,152
VIOLIN BOW GRIP
Harry A. Alshin, 5300 Ocean Blvd., Sarasota, Fla. 33581
Filed Aug. 9, 1978, Ser. No. 932,164
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



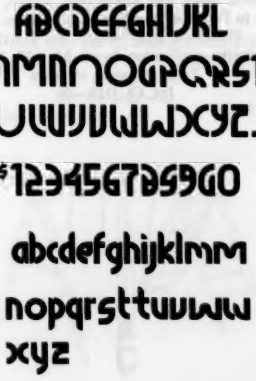
257,153
MAILING MACHINE
George H. Woods, Fairfield; Tim I. K. Oei, Rowayton, and R. Eric Anderson, Hartford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed May 22, 1978, Ser. No. 908,104
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D18—13



257,154
PRINTING PAPER DISPENSING CABINET
Gary M. Stark, 7 E. 19th St., New York, N.Y. 10003, and Alan D. Wagner, 48 Marlene Dr., Syosset, N.Y. 11791
Filed Aug. 4, 1978, Ser. No. 931,114
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—22



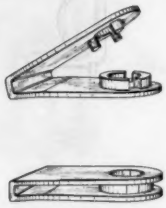
257,155
ALPHABET
Robert G. Fennell, 54 Ellingwood Ave., Stoney Creek, Ontario, Canada (L8E 1B9)
Filed Aug. 22, 1978, Ser. No. 934,942
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24



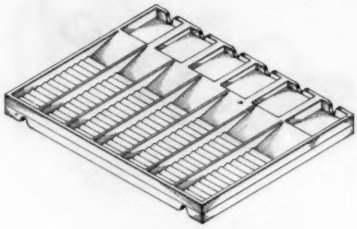
257,156
PENCIL NOVELTY
Jennie Pelletier, 1060 Vernon St., La Habra, Calif. 90631
Filed Mar. 1, 1979, Ser. No. 16,296
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—42

257,157
CARTRIDGE FOR A DRAWING INSTRUMENT OR SIMILAR ARTICLE
Norio Yamada, Soka, and Kunio Itoh, Tokyo, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1978, Ser. No. 959,195
Claims priority, application Japan, May 22, 1978, 53-21007
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—54

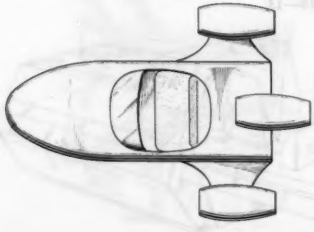
257,158
DOCUMENT CLIP
Rune J. Olsson, Hollviksnas, Sweden, assignor to Produnik Aktiebolag
Filed May 4, 1978, Ser. No. 903,000
Claims priority, application Sweden, Nov. 7, 1977, 772251
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—65



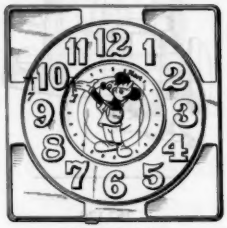
257,159
PORTABLE CARD PLAYING TRAY
Dale J. Hubbard, 2732 Fairview Ct., and Jon W. Jackson, 217 S. 10th, both of Montesano, Wash. 98563
Filed Dec. 22, 1978, Ser. No. 972,416
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—57



257,160
AERIAL TOY
John Stears, Gerrards Cross, England, assignor to Twentieth Century-Fox Film Corporation
Filed Apr. 10, 1978, Ser. No. 894,994
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—87



257,161
TOY CLOCK
Susan M. Matsumoto, New York, N.Y., assignor to L.J.N. Toys, Ltd., New York, N.Y.
Filed Aug. 23, 1978, Ser. No. 936,024
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—144

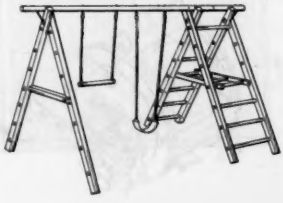


257,162
MOTHER RABBIT HOLDING A BABY RABBIT FIGURE
Jean W. Heap, Pwllheli, Wales, assignor to Pendelfin Studios Limited, Burnley, England
Filed Nov. 27, 1976, Ser. No. 964,019
Claims priority, application United Kingdom, Jun. 17, 1978, 985074/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—187

257,163
SQUASH RACKET
Kun N. Lo, 7-1, Lane 246, Sec. 3, Chung-Shan Rd., Tan-Tzu Hsiang, Tai-Chung Hsien, Japan
Filed Aug. 18, 1978, Ser. No. 935,077
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

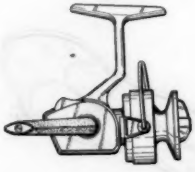
257,164
SKATEBOARD
Lawrence M. Balma, Leucadia, and David A. Dominy, Cardiff, both of Calif., assignors to Tracker Designs, Ltd.
Filed Mar. 30, 1978, Ser. No. 891,740
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—227

257,165
OUTDOOR PLAY DEVICE
James D. Ezell, P.O. Box 10272, Raleigh, N.C. 27605
Filed Sep. 5, 1978, Ser. No. 939,379
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—243

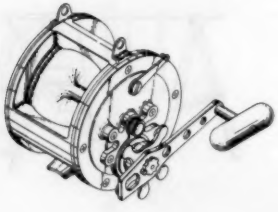


257,166
ONE PIECE PISTOL GRIP
Guy Hogue, Atascadero, Calif., assignor to Hogue Combat Grips, Inc., Los Osos, Calif.
Filed Sep. 18, 1978, Ser. No. 943,178
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

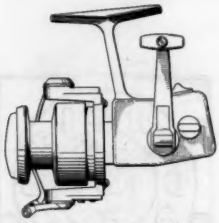
257,167
FISHING REEL
Takeshi Shohoji, Fukuyama, and Kikuo Tsunoda, Hiroshima, both of Japan, assignors to Ryobi, Ltd., Fuchu, Japan
Filed Jul. 11, 1979, Ser. No. 56,572
Claims priority, application Japan, Jan. 16, 1979, 54 1174
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



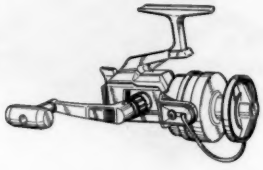
257,168
FISHING REEL
Kiyoshi Okada, Koganei, Japan, assignor to Daiwa Seiko Kabushiki Kaisha, Japan
Filed Oct. 2, 1978, Ser. No. 947,962
Claims priority, application Japan, Apr. 6, 1978, 53-13537
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



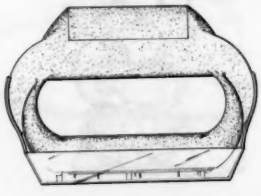
257,169
FISHING REEL
Francois Elie, Meudon, France, assignor to Mason, Fenwick & Lawrence, Washington, D.C.
Filed Oct. 13, 1978, Ser. No. 951,993
Claims priority, application France, Apr. 17, 1978, 78 282
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



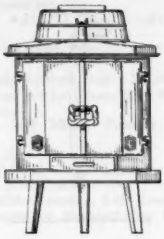
257,170
FISHING REEL
Masakazu Sakamoto, and Takeshi Shohoji, both of Fukuyama, Japan, assignors to Ryobi, Ltd., Fuchu, Japan
Filed Nov. 15, 1978, Ser. No. 961,073
Claims priority, application Japan, May 16, 1978, 53-20061
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



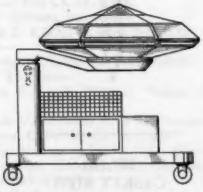
257,171
COMBINED ELECTRIC SHOCKING DEVICE FOR PERSONAL PROTECTION AND GUARD THEREFOR OR THE LIKE
Gary A. Henderson, Arvada, and Guy H. Williams, Jr., Parker, both of Colo., assignors to American Home Products Corp., New York, N.Y.
Filed Mar. 31, 1978, Ser. No. 892,352
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—99



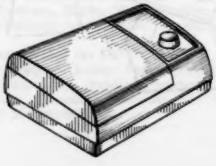
257,172
FIRE-PLACE
Henrik W. Sommerschild, Oslo, Norway, assignor to Aksjeselskapet Jotul, Oslo, Norway
Filed Sep. 12, 1978, Ser. No. 941,672
Claims priority, application Norway, May 30, 1978, 7859239
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



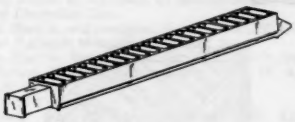
257,173
SKIN TREATMENT CONSOLE
Raffi Francian, Santa Ana, Calif., and Giovanni Scavo, 8390 Waverly Cir., Buena Park, Calif. 90621, assignors to Giovanni Scavo, Buena Park, Calif.
Filed Feb. 14, 1978, Ser. No. 877,793
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1.1



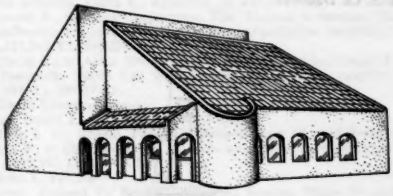
257,174
CONTACT LENS STERILIZER UNIT
Michael D. Thomas, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.
Filed Aug. 9, 1978, Ser. No. 932,686
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9



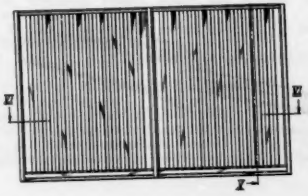
257,175
CUVETTE ASSEMBLY
V. Durga N. Rao, Richardson, Tex., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Sep. 27, 1978, Ser. No. 946,303
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29



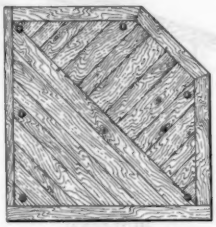
257,176
BUILDING
Raymond M. Poelvoorde, New York, N.Y., and Norman L. Woolley, Dayton, Ohio, assignors to Cassano's Inc., Dayton, Ohio
Filed May 8, 1978, Ser. No. 903,989
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



257,177
FENCING SECTION
Vincent M. Demarest, Ipsden, Wallingford, Oxford, 0X9 6BS, England
Filed Aug. 17, 1978, Ser. No. 934,878
Claims priority, application United Kingdom, Mar. 23, 1978, 983877/78
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38

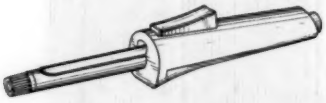


257,178
MOLDED CONCRETE AND FIBERGLASS PANEL TO ISOLATE WOOD BURNING STOVES FROM FLOORS AND WALLS
Jonathan Nasvik, Stillwater, Minn., assignor to Concrete Design Specialties, Inc., South St. Paul, Minn.
Filed Aug. 18, 1978, Ser. No. 935,079
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—58



257,179
LAMP
Charles Campo, 1901 S. 5th St., Philadelphia, Pa. 19148
Filed Mar. 14, 1978, Ser. No. 886,617
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—95

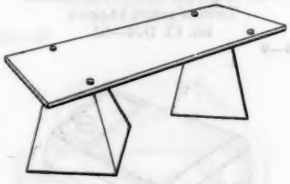
257,180
TELESCOPING CURLER/STYLER
Richard A. Valiga, Roselle, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 22, 1979, Ser. No. 5,272
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



257,181
COMBINED NAIL FILE AND WRITING IMPLEMENT CLIP
Lorin B. Brown, 1501 S. Manhattan Pl., Los Angeles, Calif. 90019
Filed Apr. 4, 1978, Ser. No. 893,493
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—59

257,182
BLANK FOR COMBINED NAIL FILE AND WRITING IMPLEMENT CLIP
Lorin B. Brown, 1501 S. Manhattan Pl., Los Angeles, Calif. 90019
Filed May 12, 1978, Ser. No. 905,414
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—59

257,183
CASKET BIER
James T. Bruce, 1440 N. State Pkwy., Chicago, Ill. 60610, and Gerald W. Berger, 1830 Locust St., Des Plaines, Ill. 60018
Filed Oct. 10, 1978, Ser. No. 949,857
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—9



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF SEPTEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. C. Co.: *See*—
Gibson, Joseph T.; and Duhon, Gerald L., 4,224,988, Cl. 166-250.000.

A. E. Staley Manufacturing Company: *See*—
Moore, Carl O., 4,225,627, Cl. 426-548.000.

AAA Products International Inc.: *See*—
Womack, Robert C., 4,225,273, Cl. 408-12.000.

Abar Corporation: *See*—
Jones, William R.; and Jindal, Prem C., 4,225,744, Cl. 13-20.000.

Abblard, Jean: *See*—
Baudouin, Michel; and Abblard, Jean, 4,225,497, Cl. 260-326.5FM.
Baudouin, Michel; and Abblard, Jean, 4,225,498, Cl. 260-326.260.

Abbott Laboratories: *See*—
Palin, William J.; and Miller, Timothy C., 4,225,783, Cl. 250-302.000.

Abbott, Warren D., Jr.: *See*—
Headen, James J.; Abbott, Warren D., Jr.; and Hampton, Clifton G., 4,225,085, Cl. 239-317.000.

Abe, Michiharu, to Ricoh Company, Ltd. Random phase plate for holography and process for manufacturing same. 4,225,211, Cl. 350-3.820.

Abe, Takeshi: *See*—
Ishii, Tsuneji; Tsukada, Tetsuro; Abe, Takeshi; and Koyama, Tsutomu, 4,225,379, Cl. 156-629.000.

ACF Industries, Inc.: *See*—
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,225,276, Cl. 410-64.000.

Achari, Achyuta; and Heiney, Elmer T., III, to Ford Motor Company. Ceramic element sensor. 4,225,559, Cl. 422-98.000.

Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, to Ciba-Geigy Corporation. Tetrahaloethylcyclopropane-carboxylic acid esters. 4,225,616, Cl. 424-305.000.

Acton, Brian; Kissling, Bruno; Robinson, Tibor; and Urosevic, Milica, to Sandoz Ltd. Resin finishing of textiles containing cellulosic fibers. 4,225,310, Cl. 8-491.000.

Ad. Struver KG (GmbH & Co.): *See*—
Philipsen, Horst, 4,225,793, Cl. 307-68.000.

Adee, James M.; and MacPherson, John A. Process for forming metal parts with less than 1 percent carbon content. 4,225,345, Cl. 75-211.000.

Adret Electronique: *See*—
Remy, Joel, 4,225,830, Cl. 331-2.000.

Advanced Thermal Systems, Inc.: *See*—
Hannah, Martin J., 4,225,143, Cl. 277-11.000.

AECI Limited: *See*—
Bosman, Johanna, 4,225,430, Cl. 210-610.000.

AFA Corporation, The: *See*—
Blake, William S.; and Wesner, Walter H., 4,225,061, Cl. 222-207.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Bourret, Philippe, 4,224,755, Cl. 43-9.000.

Agency of Industrial Science & Technology: *See*—
Kameyama, Tetsuya; Dokiya, Masayuki; and Fukuda, Kenzo, 4,225,733, Cl. 585-269.000.

AGFA-Gevaert, A.G.: *See*—
Jost, Jochen, 4,225,044, Cl. 206-456.000.

Aidlin, Samuel S.; and Aidlin, Stephen H. Method for manufacturing flat-bottomed plastic bottles. 4,225,375, Cl. 156-242.000.

Aidlin, Stephen H.: *See*—
Aidlin, Samuel S.; and Aidlin, Stephen H., 4,225,375, Cl. 156-242.000.

Aiken, Wade B. Key holder. 4,224,815, Cl. 70-457.000.

Air Products and Chemicals, Inc.: *See*—
Dalton, Augustine I., Jr.; Doran, Henry J.; and Murray, Robert D. H., 4,225,694, Cl. 562-506.000.
DePaul, Harry V.; Fondots, David C.; Mascioli, Rocco L.; and Panchak, John R., 4,225,453, Cl. 252-182.000.

Airco, Inc.: *See*—
Young, Morris S.; and Marancik, William G., 4,224,735, Cl. 29-599.000.

Ajinomoto Company, Incorporated: *See*—
Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, 4,225,585, Cl. 424-114.000.

Akademie der Wissenschaften der DDR: *See*—
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.

Akkerman, Neil H.; Foster, Stephen R.; and Vazquez, Gonzalo, to Baker GAC Inc. Actuator for converting linear to rotary motion. 4,225,110, Cl. 251-58.000.

Aktiebolaget Draco: *See*—
Hansson, Anders E., 4,225,614, Cl. 424-289.000.

Aktiebolaget Electrolux: *See*—
Fahlvik, Hans A.; and Sandquist, Kurt E., 4,225,555, Cl. 422-25.000.

Aktiebolaget Karlstads Mekaniska Werkstad: *See*—
Edblom, Karl G.; Nordin, Kenneth I.; Staaf, Per O.; Stenberg, Erik G.; Strand, Nils-Erik; and Svensson, Bo L. H., 4,225,386, Cl. 162-343.000.

Aktiebolaget SKF: *See*—
Hallerback, Stig L.; and Lachonius, Leif, 4,225,292, Cl. 417-367.000.

Aktiebolaget Svenska Kullagerfabriken: *See*—
Andersson, Per U., 4,225,148, Cl. 280-95.00R.

Akzona Incorporated: *See*—
Brandeau, Edward P.; and Gentry, John M., 4,225,207, Cl. 339-95.00R.
Brandeau, Edward P.; and Gentry, John M., 4,225,208, Cl. 339-95.00R.

Alaimo, Robert J.; and Millner, Ozra E., Jr., to Morton-Norwich Products, Inc. 8-[(4-Aminophenyl)sulfonyl]amino-2-naphthalenyl phosphorodiamidate. 4,225,526, Cl. 260-397.70R.

Alberger, Richard C. Device for removing palmetto bushes. 4,224,995, Cl. 171-105.000.

Albert M. Lock & Son, Inc.: *See*—
Lock, Melvin N.; and Chiappetta, Achille F., 4,225,181, Cl. 297-258.000.

Albrecht, Cornelius B. J. D., to U.S. Philips Corporation. Device for computer tomography. 4,225,789, Cl. 250-445.00T.

Alferova, Larisa K.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Allan, David R., to Mead Corporation, The. Method to increase the heat deflection temperature of amorphous polyethylene terephthalate. 4,225,549, Cl. 264-234.000.

Allan, David T., to Allan, David Thomson; and John MacDonald & Co. (Pneumatic Tools) Ltd. Scabbler bit floor surfacing machine. 4,225,187, Cl. 299-37.000.

Allan, David Thomson: *See*—
Allan, David T., 4,225,187, Cl. 299-37.000.

Allan, John L. H.; Readio, Philip D.; Bengali, Ajay M.; and Zuendt, Richard F., to Dart Industries Inc. Non-chromate conversion coatings. 4,225,350, Cl. 106-14.120.

Allan, John L. H.: *See*—
Zuendt, Richard F.; Bengali, Ajay M.; Readio, Philip D.; and Allan, John L. H., 4,225,351, Cl. 106-14.120.

Allen, Richard G., to Brown Oil Tools, Inc. Well tool. 4,224,987, Cl. 166-120.000.

Allen, Robert A.: *See*—
Stiel, Leonard I.; Allen, Robert A.; and Murphy, Kevin P., 4,224,795, Cl. 60-651.000.

Allied Chemical Corporation: *See*—
Armor, John N., 4,225,511, Cl. 260-566.00A.
Stiel, Leonard I.; Allen, Robert A.; and Murphy, Kevin P., 4,224,795, Cl. 60-651.000.
Stiel, Leonard I.; and Li, Chien C., 4,224,796, Cl. 60-651.000.

Allington, Robert W., to Instrumentation Specialties Company. Pumping system. 4,225,290, Cl. 417-18.000.

Almquist, Thomas A.: *See*—
Lewis, Owen; Refermat, Stanley; and Almquist, Thomas A., 4,225,826, Cl. 330-4.300.

Aloace Company Limited: *See*—
Suzuki, Ikuo, 4,225,486, Cl. 260-112.00R.

Alps Electric Co., Ltd.: *See*—
Kondo, Shiro; and Watanabe, Yoshinori, 4,225,758, Cl. 200-4.000.
Kumagai, Tadashi, 4,225,829, Cl. 331-1.00A.
Nakamura, Moritoshi; Mutoh, Ichiro; and Kiyono, Tetsuhiro, 4,225,843, Cl. 338-120.000.

Alten, Kurt. Transloading bridge for ramps. 4,224,709, Cl. 14-71.300.

Alternative Pioneering Systems, Inc.: *See*—
Erickson, Chad S.; and Dornbush, David A., 4,224,743, Cl. 34-219.000.

Alvarez, Socrates. Pipe. 4,224,953, Cl. 131-179.000.

Amada Company, Limited: *See*—
Tsuchiyama, Yuji, 4,224,858, Cl. 91-410.000.

Amann, Herbert; Morlock, Gerhard; and Trautwein, Hellmut, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of oxymethylene copolymer molding compositions

with a low content of residual formaldehyde. 4,225,703, Cl. 528-480.000.

AMCA International Corporation: *See—*
Heckelsberg, Robert E., 4,224,775, Cl. 52-528.000.

American Cyanamid Company: *See—*
Kaplan, Donald S., 4,224,946, Cl. 128-335.500.

American Home Products Corporation: *See—*
Sarantakis, Dimitrios, 4,225,472, Cl. 260-8.000.

American Medical Systems, Inc.: *See—*
Scott, F. Brantley; and Burton, John H., 4,224.934, Cl. 128-79.000.

American Standard Inc.: *See—*
Hart, James E., 4,225,193, Cl. 303-35.000.

American Underwater Products: *See—*
Hilal, Said S., 4,224,938, Cl. 128-204.260.

AMP Incorporated: *See—*
Dola, Frank P., 4,225,162, Cl. 285-161.000.
Hughes, Donald W. K., 4,225,209, Cl. 339-126.00R.

Anania, Vladimir P.: *See—*
Pokhodnya, Igor K.; Ananin, Vladimir P.; Golovko, Vladimir N.; and Denisov, Sergei I., 4,225,773, Cl. 219-146.300.

Anderson, James M.; and Anderson, Samuel J., to International Blind Company. Mounting bracket for venetian blind assembly. 4,224,974, Cl. 160-178.00R.

Anderson, John: *See—*
Columbus, Peter S.; and Anderson, John, 4,225,496, Cl. 260-29.60M.

Anderson, Mark C., to UOP Inc. Multi-bed catalytic reactor. 4,225,562, Cl. 422-188.000.

Anderson, Robert J.; and Studholme, Robert M., to Beckman Instruments, Inc. Sample introduction system for flameless emission spectroscopy. 4,225,235, Cl. 356-316.000.

Anderson, Samuel J.: *See—*
Anderson, James M.; and Anderson, Samuel J., 4,224,974, Cl. 160-178.00R.

Andersson, Per U., to Aktiebolaget Svenska Kullagerfabriken. Steering systems. 4,225,148, Cl. 280-95.00R.

Ando, Shigeo; and Kondou, Takayasu, to Nippon Gakki Seizo Kabushiki Kaisha. Waveshape memory type keyboard electronic musical instrument. 4,224,856, Cl. 84-1.190.

Andreaggi, Joseph R., to Sangamo Weston, Inc. Conductor arrangement and assembly method. 4,225,257, Cl. 403-24.000.

Andress, Harry J.: *See—*
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., 4,225,447, Cl. 252-34.700.

Anglerot, Didier, to Rhone-Poulenc Industries. Production of thin layers of polycrystalline silicon on a liquid layer containing a reducing agent. 4,225,367, Cl. 148-174.000.

Anglo-American Clays Corporation: *See—*
Price, William M.; and Nott, Alan J., 4,225,425, Cl. 209-5.000.
Price, William M.; and Nott, Alan J., 4,225,426, Cl. 209-5.000.

Anthone, Leo E.; and Berglund, Sidney J., to Minnesota Mining and Manufacturing Company. Continuous film carrier wire connecting system. 4,225,042, Cl. 206-332.000.

Appel, Karl-Richard: *See—*
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,225,619, Cl. 424-331.000.

Appelbaum, Hermann, to Fochtel & Sachs AG. Internal-combustion engine arrangement with improved carburetor mounting. 4,224,919, Cl. 123-195.00A.

Arai, Tetsuo: *See—*
Tajima, Hiroyuki; and Arai, Tetsuo, 4,225,654, Cl. 429-34.000.

Arbit, Harold A., to Mobil Oil Corporation. Process for improving films of poly(p-methylstyrene) and copolymers thereof by high energy radiation treatments. 4,225,403, Cl. 204-159.140.

Archambault, Larry J., to Gunner, William; and Leiken, Susan, part interest to each. Exercise equipment having detachable spring assembly and foldable carrying handle. 4,225,132, Cl. 272-137.000.

Argila, Joseph: *See—*
Sinclair, William Y.; and Argila, Joseph, 4,225,205, Cl. 339-59.00M.

Argus Chemical Corp.: *See—*
Minagawa, Motonobu; Nakahara, Yutaka; and Takahashi, Masayuki, 4,225,474, Cl. 260-23.0XA.

Aries Electronics, Inc.: *See—*
Sinclair, William Y.; and Argila, Joseph, 4,225,205, Cl. 339-59.00M.

Arima, Yasutaka: *See—*
Umemura, Sumio; Kitoh, Ryozo; Itoh, Shigeru; Arima, Yasutaka; Itoh, Kosuke; and Fukui, Hideaki, 4,225,462, Cl. 252-440.000.

Armor, John N., to Allied Chemical Corporation. Direct oximation of ketones using gallia catalysts. 4,225,511, Cl. 260-566.00A.

Armstrong Cork Company: *See—*
Kaufmann, John C., 4,225,374, Cl. 156-220.000.
Lilley, George L., 4,225,643, Cl. 428-207.000.

Arndt, Friedrich: *See—*
Nusslein, Ludwig; and Arndt, Friedrich, 4,225,338, Cl. 71-120.000.

Arnold, Jerry D.; Fair, Harry J.; Fair, Laura V.; and Berry, Johnny D., to Calumet Industries, Inc. Process for preparing highly basic magnesium sulfonates. 4,225,446, Cl. 252-33.200.

Arnold, Werner F.: *See—*
Meisner, Alfred; and Arnold, Werner F., 4,225,776, Cl. 219-492.000.

Artag Plastics Corporation: *See—*
Flubacker, Charles H., 4,225,056, Cl. 221-2.000.

Asahi-Dow Limited: *See—*
Inoue, Tadashi, 4,225,049, Cl. 215-12.00R.

Asahi Glass Company, Limited: *See—*
Gunjima, Tomoki; and Takeshita, Isamu, 4,225,400, Cl. 204-98.000.
Ishii, Tsuneji; Tsukada, Tetsuro; Abe, Takeshi; and Koyama, Tsutomu, 4,225,379, Cl. 156-629.000.

Asahi, Tetsuma, to Silver Seiko Co., Ltd. Character selection for single element printer. 4,225,252, Cl. 400-161.500.

Asai, Mitsuko: *See—*
Higashide, Eiji; Asai, Mitsuko; and Tanida, Seiichi, 4,225,494, Cl. 260-239.30P.

Asano, Kazuhiro: *See—*
Sasaki, Seiko; and Asano, Kazuhiro, 4,224,789, Cl. 368-185.000.

Asberg, Sture L., to SKF Nova AB. Locking device. 4,225,263, Cl. 403-326.000.

Assi Can Aktiebolag: *See—*
Berg, Rolf, 4,225,376, Cl. 156-272.000.

Athanasiades, Neocles: *See—*
McLoughlin, John; Athanasiades, Neocles; and Rotblum, Yehuda, 4,224,826, Cl. 73-198.000.

Atlantic Development Company: *See—*
Price, Douglas R.; Dalessio, Frederick F.; and Jones, Phillip H., 4,225,949, Cl. 367-96.000.

Atlantic Richfield Company: *See—*
Nelson, Thomas J., 4,225,417, Cl. 208-89.000.

Atwood Vacuum Machine Company: *See—*
Marx, Thomas O., 4,225,261, Cl. 403-122.000.

Audibert, Alain, to Sandoz Ltd. Ergolene or ergoline compounds for treating congestive heart failure. 4,225,605, Cl. 424-250.000.

Ault, Earl R.; and Bhaumik, Mani L., to United States of America, Navy. CW Scalable donor-acceptor gas transfer laser. 4,225,831, Cl. 331-94.5PE.

Automated Building Components, Inc.: *See—*
Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., 4,225,095, Cl. 242-1.000.
Seipos, Andrew G., 4,224,714, Cl. 16-29.000.

Automotive Products Limited: *See—*
Crawford, Peter F., 4,225,025, Cl. 192-70.200.

Ayres, John E. Fluid dispensing pump assembly. 4,225,063, Cl. 222-380.000.

B. F. Goodrich Company, The: *See—*
Kroenke, William J., 4,225,484, Cl. 260-45.75R.

B & G Equipment Company: *See—*
Brehm, George L., 4,225,065, Cl. 222-631.000.

Babb, Burton A., to Babbco, Ltd. Broad band dynamic loudspeaker. 4,225,756, Cl. 179-115.5VC.

Babb, Burton A., to Babbco, Ltd. Broad band dynamic loudspeaker. 4,225,757, Cl. 179-115.50R.

Babbco, Ltd.: *See—*
Babb, Burton A., 4,225,756, Cl. 179-115.5VC.
Babb, Burton A., 4,225,757, Cl. 179-115.50R.

Babcock Krauss-Maffei Industrieanlagen GmbH: *See—*
Steier, Klaus, 4,225,091, Cl. 241-24.000.

Bacha, F. Timothy, to Carrier Corporation. Gas metal arc welding apparatus for repairing misaligned tube holes. 4,225,772, Cl. 219-137.620.

Bachtiger, Hans, to Gygli Technik AG. Method for stiffening and dyeing textile fabric. 4,225,377, Cl. 156-314.000.

Bader, Henry; and Sparks, John W. Process for synthesizing thiacyanine dyes. 4,225,705, Cl. 542-452.000.

Badger Company, Inc., The: *See—*
Jones, David H.; Shingles, Terry; Kelly, Felix T.; and Dry, Mark E., 4,225,531, Cl. 260-449.60R.

Bagby, Arthur P.: *See—*
Smith, Lloyd B., 4,225,010, Cl. 181-155.000.

Baggiolini, Enrico G.; and Uskokovic, Milan R., to Hoffmann-La Roche Inc. Vitamin D_3 metabolite derivatives. 4,225,525, Cl. 260-397.200.

Bailey, Dennis, to Spang Industries, Inc. Target assembly for games. 4,225,134, Cl. 273-127.00R.

Bailey, Dennis, to Spang Industries, Inc. Kicker-type bumper assembly for games. 4,225,135, Cl. 273-129.00P.

Bailey, Dunn M.; and Harper, Ernest A., deceased (by Bailey, Dunn M., acting legal representative), to Phillips Petroleum Company. Natural gas liquefaction with nitrogen rejection stabilization. 4,225,329, Cl. 62-24.000.

Bailey, Dunn M., acting legal representative: *See—*
Bailey, Dunn M.; and Harper, Ernest A., deceased, 4,225,329, Cl. 62-24.000.

Baker GAC Inc.: *See—*
Akkerman, Neil H.; Foster, Stephen R.; and Vazquez, Gonzalo, 4,225,110, Cl. 251-58.000.

Baker, Joe L.; and Roth, Lanny J., to J. I. Case Company. Backhoe bucket quick coupling. 4,225,283, Cl. 414-723.000.

Balasubramanian, N., to United States of America, Army. Process and apparatus for laser illumination of printing plates. 4,225,224, Cl. 355-77.000.

Balasubramanian, N. Method and system for determining interferometric optical path length difference. 4,225,240, Cl. 356-360.000.

Baldwin, Floyd G.; and McIntire, Kenneth D., to McDonnell Douglas Corporation. Pallet coupler. 4,225,259, Cl. 403-62.000.

Ball, Alan, to Minnesota Mining and Manufacturing Company. Driographic printing plate. 4,225,663, Cl. 430-303.000.

Ball, Douglas C.; and Walker, Marshall, to Hauserman Limited. Space divider system. 4,224,769, Cl. 52-36.000.

Ball, Edmund H., to Pirelli General Cable Works, Limited. Oil-filled electric cable joint without oil channel in joint insulation. 4,225,746, Cl. 174-22.00R.

Bals, Edward J., to Pennbrook Corporation. Rotary atomizer with asymmetrical teeth. 4,225,084, Cl. 239-223.000.

Banik, Michael S., Jr., to Inolex Corporation. Protein hydrolysis products from limed splits. 4,225,622, Cl. 426-32.000.
Banucci, Eugene G.; and Olander, Walter K., to General Electric Company. Manganese complexes of phenyl benzoin in oxime catalysts. 4,225,528, Cl. 260-429.00J.
Barber, Eugene F.; and Barber, Steven C., to Wee Donuts, Inc. Donut making devices. 4,224,863, Cl. 99-331.000.
Barber, Steven C.: *See*—
Barber, Eugene F.; and Barber, Steven C., 4,224,863, Cl. 99-331.000.
Barient Company: *See*—
Ottemann, William C., 4,225,118, Cl. 254-333.000.
Barkan, Philip; and Imam, Imdad, to General Electric Company. Electric circuit breaker comprising a plurality of vacuum interrupters simultaneously operated by a common operator. 4,225,761, Cl. 200-144.00B.
Barkan, Philip, to General Electric Company. Means for suppressing contact-separation at the end of a vacuum circuit-breaker closing operation. 4,225,763, Cl. 200-144.00B.
Barlow, Michael L., to United States of America, Navy. Thin disk acoustic baffle system. 4,225,955, Cl. 367-131.000.
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., to Imperial Chemical Industries Limited. Process for electrolytically preparing a semiconducting film on a flexible substrate. 4,225,408, Cl. 204-181.00N.
Barnard, Michael L., to General Motors Corporation. Vehicle air-fuel controller having hot restart air/fuel ratio adjustment. 4,224,913, Cl. 123-440.000.
Barnett, Ronald R., to General Motors Corporation. Passive restraint belt system. 4,225,156, Cl. 280-804.000.
Barr, Rolla W. Device for securing spare wheels. 4,225,066, Cl. 224-42.240.
Barraud, Andre; Gras, Roger; and Vandevyver, Michel, to Commissariat a l'Energie Atomique. Device for formation and deposition of monomolecular layers of amphiphilic molecules on a substrate. 4,224,896, Cl. 118-402.000.
Barrett, Edward L. Permanent magnet motor. 4,225,798, Cl. 310-154.000.
Barrett, M. James, to Smith Kline Instruments, Inc. Covalently bound biological substances to plastic materials and use in radioassay. 4,225,784, Cl. 250-303.000.
Barth, Inc.: *See*—
Barth, James T., 4,225,080, Cl. 236-1.00G.
Barth, James T., to Barth, Inc. Damper construction for a gas fired combustion apparatus. 4,225,080, Cl. 236-1.00G.
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., to General Signal Corporation. Butterfly valve having cartridge construction with improved bearings. 4,225,113, Cl. 251-306.000.
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., to General Signal Corporation. Butterfly valve with improved shaft connection. 4,225,114, Cl. 251-308.000.
Bartoli, Gian V. Blade endo-osseous apparatus for dental plates, and fixing method therefor. 4,225,668, Cl. 433-176.000.
BASF Aktiengesellschaft: *See*—
Henkler, Herbert; Gehrung, Manfred; and Rasek, Eduard, 4,225,098, Cl. 242-192.000.
Schoettle, Klaus; Lewin, Helmut; Hoffmann, Werner; Dobler, Peter; and Gliniorz, Lothar, 4,225,099, Cl. 242-192.000.
BASF Wyandotte Corporation: *See*—
Login, Robert B., 4,225,681, Cl. 525-30.000.
Baskov, Jury A.: *See*—
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; and Baskov, Jury A., 4,225,538, Cl. 261-92.000.
Bassani, Mariano; and Bianco, Mario. System for opening fabrics in rope-form. 4,224,724, Cl. 26-75.000.
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, to International Business Machines Corporation. Wear resistant magnetorestrictive head. 4,225,892, Cl. 360-113.000.
Bates, Roger J.: *See*—
Jackson, Lynden A.; and Bates, Roger J., 4,224,787, Cl. 57-15.000.
Battelle-Institut e.V.: *See*—
Puchinger, Herwig; Mueller, Ulrich; and Sernetz, Manfred, 4,225,671, Cl. 435-71.000.
Baudouin, Michel; and Abblard, Jean, to Rhone-Poulenc Industries. Preparation of N-substituted oligo-imides. 4,225,497, Cl. 260-326.5FM.
Baudouin, Michel; and Abblard, Jean, to Rhone-Poulenc Industries. Preparation of N-substituted oligo-imides. 4,225,498, Cl. 260-326.260.
Bauer, Friedrich, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Self-cooling resonance torsional vibration damper. 4,224,835, Cl. 74-574.000.
Bauer, Wolfgang; and Ribka, Joachim, to Cassella Aktiengesellschaft. Water-soluble disazo dyestuffs, prepared from unsymmetrical heterocyclic diamines. 4,225,492, Cl. 260-157.000.
Baugh, Gerald R. Wrist-mounted communication device. 4,225,965, Cl. 455-31.000.
Bautz, Anton, to BBC Brown Boveri & Company Limited. Collector head for trolley cars. 4,225,023, Cl. 191-59.100.
Baxter, Ronald W., to Page Engineering Company (Sunbury-on-Thames), Ltd. Electromagnetic annunciator. 4,224,752, Cl. 40-463.000.
Baxter Travenol Laboratories, Inc.: *See*—
Dennehey, T. Michael; and Dixon, Dwight, 4,225,688, Cl. 525-444.000.
Miller, Jimmy L.; and Schnell, William J., 4,225,438, Cl. 210-321.00B.
Bayer Aktiengesellschaft: *See*—
Dieterich, Dieter, 4,225,532, Cl. 260-453.0SP.
Eimers, Erich; Dhein, Rolf; and Cohnen, Wolfgang, 4,225,483, Cl. 260-45.80A.
Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, 4,225,704, Cl. 542-441.000.
Krall, Hermann D.; and Schwarz, Herbert, 4,225,510, Cl. 260-566.00D.
Marhold, Albrecht; and Klauke, Erich, 4,225,731, Cl. 568-775.000.
Maurer, Fritz; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,225,594, Cl. 424-200.000.
Medem, Harald; Freitag, Dieter; Hespe, Hans; and Heynemann, Carl, 4,225,698, Cl. 528-176.000.
Nickel, Horst; and Suckfull, Fritz, 4,225,493, Cl. 260-186.000.
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,225,489, Cl. 260-154.000.
Schuster, Karl-Ernst; Rosenkranz, Hans J.; Rudolph, Hans; Fuhr, Karl; Zorn, Bruno; and Traubel, Harro, 4,225,695, Cl. 528-75.000.
Sirrenberg, Wilhelm; Klauke, Erich; Brandes, Wilhelm; and Roessler, Peter, 4,225,618, Cl. 424-322.000.
von Bittera, Miklos; Sieveking, Hans U.; Stendel, Wilhelm; and Voege, Herbert, 4,225,578, Cl. 424-14.000.
Wagner, Kuno, 4,225,481, Cl. 260-33.20R.
Bayerische Motoren Werke Aktiengesellschaft: *See*—
Buchleitner, Konrad, 4,225,903, Cl. 362-61.000.
Kuzma, Gyozo, 4,225,024, Cl. 192-53.00F.
BBC Brown Boveri & Company Limited: *See*—
Bautz, Anton, 4,225,023, Cl. 191-59.100.
Dandliker, Rene; Lanz, Otto; and Mottier, Francois, 4,225,241, Cl. 356-400.000.
Datz, Rudolf; and Riegger-Dreher, Helena, 4,224,981, Cl. 165-114.000.
Masek, Jaroslav; and Suter, Franz, 4,225,284, Cl. 415-16.000.
Raggenbass, Werner; and Zwar, Kurt, 4,225,961, Cl. 371-36.000.
Beadle, Bruce R.; Conners, John P.; and Larson, Michael E., to Giddings & Lewis, Inc. System for entering information into and taking it from a computer from a remote location. 4,225,918, Cl. 364-200.000.
Beam, Monte. Condensed golf playing area with chance selected starting locations. 4,225,136, Cl. 273-176.0AB.
Beaudoin, James J.; and Sereda, Peter J., to Canadian Patents and Development Limited. Reinforced sulphur-asphalt composites of two continuous phases. 4,225,353, Cl. 106-275.000.
Bechtiger, Charles G., to Sargent & Greenleaf, Inc. Time lock having releasable carrier latching deadbolt. 4,224,814, Cl. 70-272.000.
Becka, Michael M., to International Shoe Machine Corporation. Upper molding and flanging machine. 4,224,708, Cl. 12-8.200.
Beckman Instruments GmbH: *See*—
Schmider, Paul; and Ruberg, Wolfgang, 4,225,234, Cl. 356-312.000.
Beckman Instruments, Inc.: *See*—
Anderson, Robert J.; and Studholme, Robert M., 4,225,235, Cl. 356-316.000.
Watts, Geoffrey P., 4,225,825, Cl. 328-185.000.
Beerenwinkel, Dieter, to Jagenberg Werke Atkiengesellschaft. Cross cutter for rolls of materials. 4,224,848, Cl. 83-76.000.
Beggs, Donald; and Scarlett, John C., to Midrex Corporation. Method for the direct reduction of iron using gas from coal. 4,225,340, Cl. 75-35.000.
Behr-Thomson Dehnstoffregler GmbH: *See*—
Saur, Roland; and Kurz, Manfred, 4,225,841, Cl. 337-393.000.
Behrenz, Wolfgang: *See*—
Maurer, Fritz; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,225,594, Cl. 424-200.000.
Beilinson, Iosif D.: *See*—
Vaschuk, Valery I.; Starikov, Gennady V.; Solomakha, Gennady P.; Chekhov, Oleg S.; Shmuilov, Nikolai G.; Beilinson, Iosif D.; and Zats, Boris S., 4,225,541, Cl. 261-114.0VT.
Beisner, Robert W.; and Winans, Stephen C., to Union Carbide Corporation. Rhodium catalyst regeneration by carbon monoxide treatment. 4,225,530, Cl. 260-449.00L.
Bekaert, Johan; and Goos, Raymond, to GTE Sylvania N.V. Cathode ray tube coma correction device. 4,225,804, Cl. 313-412.000.
Belangee, Kenneth: *See*—
Kleine, Charles A.; and Belangee, Kenneth, 4,224,817, Cl. 72-54.000.
Belart, Juan, to ITT Industries, Inc. Brake booster. 4,225,022, Cl. 188-348.000.
Bell Telephone Laboratories, Incorporated: *See*—
Boyd, Gary D.; Lemons, Ross A.; Phillips, James C.; Remeika, Joseph P.; and Spencer, Edward G., 4,225,216, Cl. 350-357.000.
Grau, Thomas G.; and Tompsett, David E., 4,225,819, Cl. 324-415.000.
Helliker, Conrad D.; and O'Sullivan, Thomas D., 4,225,346, Cl. 75-211.000.
Moran, Joseph M.; and Taylor, Gary N., 4,225,664, Cl. 430-306.000.
Bellaiche, Hubert; and Zecevic, Vladimir, to Societe Franco-Americaine de Constructions Atomiques Framatome. Crack detection cell for checking the leakproofness of fuel element units. 4,225,388, Cl. 176-19.0LD.
Bellavoine, Robert, to De Pruines Iseco. Cupboard for storing prepared meals, with cold-storage and reheating by microwaves. 4,225,204, Cl. 312-236.000.
Ben Hill Griffin, Inc.: *See*—
Lynn, Charles C., 4,225,628, Cl. 426-549.000.

Bendix Autolite Corporation: *See*—
Schlesselman, Harold D.; and Weber, David C., 4,225,842, Cl. 338-34.000.

Bendix Corporation, The: *See*—
Menin, Albert S.; and Fife, Merrill E., 4,225,951, Cl. 367-105.000.
Weber, Robert E.; and Harper, Patrick D., 4,225,898, Cl. 361-154.000.

Bene, Robert; and Fortini, Joseph A., to Country Log Homes, Inc. Window construction. 4,224,772, Cl. 52-233.000.

Beneke, Wolfgang: *See*—
Teichmann, Paul; Beneke, Wolfgang; Cremer, Heinrich; and Ludwig, Guy, 4,224,717, Cl. 19-98.000.

Bengali, Ajay M.: *See*—
Allan, John L. H.; Readio, Philip D.; Bengali, Ajay M.; and Zuendt, Richard F., 4,225,350, Cl. 106-14.120.
Zuendt, Richard F.; Bengali, Ajay M.; Readio, Philip D.; and Allan, John L. H., 4,225,351, Cl. 106-14.120.

Berg, Albert T., Jr.: *See*—
Langlie, Howard; and Berg, Albert T., Jr., 4,224,786, Cl. 56-400.010.

Berg, Rolf, to Assi Can Aktiebolag. Method for producing a laminated surface. 4,225,376, Cl. 156-272.000.

Berger, Michael J.; and French, Hollis E., to Itek Corporation. Abrasion resistant coatings for unsaturated polymeric substrates. 4,225,631, Cl. 427-54.100.

Berglund, Sidney J.: *See*—
Anthone, Leo E.; and Berglund, Sidney J., 4,225,042, Cl. 206-332.000.

Bernard, Solange; Lajotte, Dominique; Michelon, Francois; and Sourgens, Jacques, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Loudspeaker telephone. 4,225,754, Cl. 179-81.00B.

Berrer, Dagmar: *See*—
Brechbuhler, Hans U.; Laanio, Verena; and Berrer, Dagmar, 4,225,598, Cl. 424-249.000.

Berry, James F. Table. 4,224,881, Cl. 108-150.000.

Berry, Johnny D.: *See*—
Arnold, Jerry D.; Fair, Harry J.; Fair, Laura V.; and Berry, Johnny D., 4,225,446, Cl. 252-33.200.

Berthelsen, Mogens R. Press, especially for pressing straw material into briquets. 4,224,868, Cl. 100-98.00A.

Berwin Development Ltd.: *See*—
Petrescue, Bernard, 4,224,921, Cl. 126-121.000.

Betts, William L.; and Blackman, L. Ray, to E-Systems, Inc. Multiplex conference bridge. 4,225,956, Cl. 370-62.000.

Betz, Norman L.: *See*—
Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., 4,225,621, Cl. 426-2.000.

Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Transport vehicle. 4,225,153, Cl. 280-788.000.

Bhaumik, Mani L.: *See*—
Ault, Earl R.; and Bhaumik, Mani L., 4,225,831, Cl. 331-94.5PE.

Bianchi, John E.; and Nichols, Richard D. E., to Bianchi Leather Products, Inc. Holster with controllable resistance to draw. 4,225,067, Cl. 224-243.000.

Bianchi Leather Products, Inc.: *See*—
Bianchi, John E.; and Nichols, Richard D. E., 4,225,067, Cl. 224-243.000.

Bianco, Mario: *See*—
Bassani, Mariano; and Bianco, Mario, 4,224,724, Cl. 26-75.000.

Bibeau, Jacques: *See*—
Bibeau, Jean-Marie; Bibeau, Jacques; and Bibeau, Marcel, 4,225,281, Cl. 414-498.000.

Bibeau, Jean-Marie; Bibeau, Jacques; and Bibeau, Marcel. Self-loading container carrier truck. 4,225,281, Cl. 414-498.000.

Bibeau, Marcel: *See*—
Bibeau, Jean-Marie; Bibeau, Jacques; and Bibeau, Marcel, 4,225,281, Cl. 414-498.000.

Bicking, John B.: *See*—
Cragoe, Edward J., Jr.; Lee, Ta-jyh; and Bicking, John B., 4,225,609, Cl. 424-270.000.

Bieler, Anne C.; and Howe, Milton A., Jr., to W. R. Grace & Co. Sealing cross-linked thermoplastic materials. 4,225,373, Cl. 156-198.000.

Bielman, Thomas F. Safety device for firearms. 4,224,753, Cl. 42-1.0LP.

Bier, Kenneth C.; and Miller, Robert J., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,224,908, Cl. 123-438.000.

Binder, Klaus; Charzinski, Peter; Hiereth, Hermann; and Polz, Harald, to Daimler-Benz Aktiengesellschaft. Air-compressing injection internal combustion engine with auxiliary chamber. 4,224,902, Cl. 123-280.000.

Biola, Georges; Komorn, Yves; and Limongi, Eric, to Rhone-Poulenc Industries. Process for the manufacture of beta-methylthiopropionaldehyde. 4,225,516, Cl. 568-41.000.

Birdsall, John; and Fauls, Thomas, to Mego Corp. Bubble-blowing doll. 4,224,760, Cl. 46-116.000.

Bishai, Macram N., to General Motors Corporation. Field magnet assembly. 4,225,799, Cl. 310-154.000.

Bishop, Thomas R.: *See*—
Hooker, Richard B.; and Bishop, Thomas R., 4,225,265, Cl. 403-353.000.

Bittner, Hans-Joachim; Scherer, Heribert; and Hanses, Hans, to H. Putsch GmbH & Company. Method of and apparatus for producing glass vessels. 4,225,331, Cl. 65-48.000.

Black & Decker, Inc.: *See*—
Gantz, Carroll M.; Pugh, Timothy G.; and Karasa, Alvydas P., 4,225,814, Cl. 320-2.000.

Black, Ella J.: *See*—
Black, Henry C.; and Black, Ella J., 4,224,712, Cl. 15-209.00R.

Black, Henry C.; and Black, Ella J., to Sweat Buddy, Inc. Towel and method. 4,224,712, Cl. 15-209.00R.

Blackman, L. Ray: *See*—
Betts, William L.; and Blackman, L. Ray, 4,225,956, Cl. 370-62.000.

Blake, William S.; and Wesner, Walter H., to AFA Corporation, The. Fluid dispensing device. 4,225,061, Cl. 222-207.000.

Blauth, Konrad: *See*—
Zimmermann, Hans; Pieper, Fritz; Blauth, Konrad; and Nagel, Hartmut, 4,225,129, Cl. 271-204.000.

Blazek, William S., to TRW Inc. Method of assembling molds. 4,224,976, Cl. 164-4.000.

BLD Products, Ltd.: *See*—
Neighbor, Larry; and Roche, George, 4,224,860, Cl. 92-100.000.

Block, Barry. Capacitive force transducer. 4,225,755, Cl. 179-111.00E.

Block, Robert S.; and Martin, John R., to Telease, Inc. Method and system for subscription television billing and access. 4,225,884, Cl. 358-122.000.

Bloemendaal, John F.; Boone, Arthur M.; and Zanolli, Alexander B., to Eastman Kodak Company. Illumination apparatus. 4,225,923, Cl. 362-301.000.

Blomberg, Folke I. Sensor for braking systems. 4,225,018, Cl. 188-181.00R.

Blomberg, Folke I. Braking system sensor and method. 4,225,019, Cl. 188-181.00R.

Blomberg, Folke I. Braking arrangement with rotational rate of change sensor. 4,225,020, Cl. 188-181.00R.

Bloomfield, Roger D.: *See*—
Werner, Frank D.; Kleven, Lowell A.; Case, James T.; and Bloomfield, Roger D., 4,224,928, Cl. 126-450.000.

Blount, Elmo M., to Mobil Oil Corporation. Method of dynamically killing a well blowout. 4,224,989, Cl. 166-250.000.

Blow, Thomas C., to United States of America, Army. Power area collocation of transmitters. 4,225,966, Cl. 455-67.000.

Bloys, Billy G. Water conservation shower. 4,224,700, Cl. 4-603.000.

Blue Wing Corporation: *See*—
Rawlings, Robert M.; and Procter, Donald, 4,225,620, Cl. 426-2.000.

Blueberry Equipment, Inc.: *See*—
Patzlaff, Albert W., 4,225,424, Cl. 209-3.100.

Bochmer Eisennuette Heintzmann GmbH: *See*—
Nerlich, Ernst-Gunter, 4,225,271, Cl. 405-302.000.

Boehringer Ingelheim GmBH: *See*—
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,225,619, Cl. 424-331.000.

Bohner, Beat: *See*—
Fory, Werner; Rempfler, Hermann; Pissiotas, Georg; Rohr, Otto; and Bohner, Beat, 4,225,336, Cl. 71-88.000.

Boisde, Gilbert; and Boissier, Alain, to Commissariat a l'Energie Atomique. Photometric cell. 4,225,232, Cl. 356-246.000.

Boissier, Alain: *See*—
Boisde, Gilbert; and Boissier, Alain, 4,225,232, Cl. 356-246.000.

Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, to Hoffmann-La Roche Inc. Polyene compounds. 4,225,527, Cl. 260-408.000.

Boone, Arthur M.: *See*—
Bloemendaal, John F.; Boone, Arthur M.; and Zanolli, Alexander B., 4,225,923, Cl. 362-301.000.

Booth, Robin G.; and Cooper, Anthony R., to Dynapol. Efficiency of ultrafiltration purification of solutions of polymeric colorants by inorganic base addition. 4,225,432, Cl. 260-144.000.

Borden, Inc.: *See*—
Carumpalos, Constantine G., 4,225,475, Cl. 260-25.000.
Columbus, Peter S.; and Anderson, John, 4,225,496, Cl. 260-29.60M.
Williams, James H., 4,225,680, Cl. 521-109.000.

Bore, Pierre; and Tourenq, Lucienne, to L'Oreal. Apparatus for measuring the amount of sebum secreted by the skin of a living subject. 4,224,950, Cl. 128-759.000.

Borg-Warner Corporation: *See*—
Falk, John C., 4,225,684, Cl. 525-169.000.

Bosman, Johanna, to AECI Limited. Biological process. 4,225,430, Cl. 210-610.000.

Bosser, Stephane; and Heitz, Pierre, to Compagnie d'Etudes et de Realisations de Cybernetique Industrielle. Tank filling installations. 4,224,968, Cl. 141-284.000.

Boston University, The Trustees of: *See*—
Ogan, Kenneth L., 4,225,233, Cl. 356-308.000.

Bourret, Philippe, to Agence Nationale de Valorisation de la Recherche (ANVAR). Trawl-net apparatus having controlled net opening and closing. 4,224,755, Cl. 43-9.000.

Boutier, Jacques L.; Grammont, Paul D. A.; and Herbin, Jean E. E., to Diamond Shamrock Corporation. Process for the chloromethylation of polymers for the production of anionic exchange resins. 4,225,677, Cl. 521-31.000.

Bouwkamp, Gerald R.; Davis, Charles W.; Gilbert, Wesley B.; and Donahue, Charles J., to Stanadyne, Inc. Fuel injection pump and plunger control means therefor. 4,225,291, Cl. 417-214.000.

Bowden, Donald R., to Solar Unlimited, Inc. In-line manifold solar heat collectors. 4,224,926, Cl. 126-448.000.

Boyd, Gary D.; Lemons, Ross A.; Phillips, James C.; Remeika, Joseph P.; and Spencer, Edward G., to Bell Telephone Laboratories, Incor-

porated. Tungsten niobate electrochromic device. 4,225,216, Cl. 350-357.000.
Boyer, Jean J., to Societe Anonyme Secmafer. Airport towing vehicle for handling large transport aircrafts. 4,225,279, Cl. 414-428.000.
BPB Industries Limited: *See*—
Ward, Arthur G. T., 4,225,360, Cl. 106-109.000.
Braid, Milton, to Mobil Oil Corporation. Copper thiobis(alkylphenols) and antioxidant compositions thereof. 4,225,448, Cl. 252-42.700.
Brandeau, Edward P.; and Gentry, John M., to Akzona Incorporated. Convertible cable-connector assembly. 4,225,207, Cl. 339-95.00R.
Brandeau, Edward P.; and Gentry, John M., to Akzona Incorporated. Cable-connector assembly with high density ground terminal. 4,225,208, Cl. 339-95.00R.
Brandes, Wilhelm: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; Brandes, Wilhelm; and Rossler, Peter, 4,225,618, Cl. 424-322.000.
Braun, Morris; and Spransy, George B., to W. Braun Co. Liquid flow controlling dispensing plug for wipe-on applicator. 4,225,255, Cl. 401-137.000.
Bray, William E., to Texas Instruments Incorporated. Self-referencing power converter. 4,225,913, Cl. 363-97.000.
Brechbuhler, Hans U.; Laanio, Verena; and Berrer, Dagmar, to Ciba-Geigy Corporation. 2-Cyclopropylamino-4,6-diamino-s-triazine. 4,225,598, Cl. 424-249.000.
Brehm, George L., to B & G Equipment Company. Powder sprayer. 4,225,065, Cl. 222-631.000.
Breitschwerdt, Werner; and Langenbeck, Andreas, to Daimler-Benz Aktiengesellschaft. Arrangement for the accommodation of winter sport equipment objects on a motor vehicle roof. 4,225,069, Cl. 224-328.000.
Bremer, Noel J., to Standard Oil Company (Ohio). Production of maleic anhydride from four-carbon hydrocarbons using catalysts prepared by hydrothermal techniques. 4,225,465, Cl. 252-435.000.
Bretone, John, Jr. Plumbing apparatus. 4,224,702, Cl. 4-252.00R.
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, to Boehringer Ingelheim GmBH. Substituted fluoracylresorcinols. 4,225,619, Cl. 424-331.000.
Bridge, Iain N., to Bridge Storar Ltd. Mixing device. 4,225,246, Cl. 366-40.000.
Bridge Storar Ltd.: *See*—
Bridge, Iain N., 4,225,246, Cl. 366-40.000.
Brilts, Bruno, deceased: *See*—
Nordstrom, Walter A.; Brilts, Bruno, deceased; and Dumoulin, Rasma, heir, 4,225,282, Cl. 414-694.000.
Brilts, Nina, heir: *See*—
Nordstrom, Walter A.; Brilts, Bruno, deceased; and Dumoulin, Rasma, heir, 4,225,282, Cl. 414-694.000.
Bringhurst, Edward D.: *See*—
Wagner, Richard E.; Chandrasekaran, Verivada; and Bringhurst, Edward D., 4,225,250, Cl. 400-124.000.
Brinkerhoff, VerDon C. Split cycle engine and method. 4,224,798, Cl. 60-652.000.
British Petroleum Company Limited, The: *See*—
Gane, Brian R., 4,225,517, Cl. 568-487.000.
Brixner, Lothar H., to Du Pont de Nemours, E. I., and Company. X-ray intensifying screen based on rare earth tantalate. 4,225,653, Cl. 428-539.000.
Brooks, Julius C.; Pfeifer, Kenneth D.; and Sommerkamp, Robert M., to Owens-Corning Fiberglas Corporation. Tank forming mandrel with tank bottom mold. 4,225,302, Cl. 425-438.000.
Brown, Herbert R., to United States of America, Air Force. Aircraft ejection system collision avoidance system. 4,225,101, Cl. 244-122.0AE.
Brown, John A.: *See*—
Kilian, John P.; and Brown, John A., 4,225,016, Cl. 188-38.000.
Brown Oil Tools, Inc.: *See*—
Allen, Richard G., 4,224,987, Cl. 166-120.000.
Brown, Thomas F.: *See*—
Waters, Ronald L.; Grady, Thomas J.; Brown, Thomas F.; and Long, E. Shirley, 4,225,852, Cl. 340-286.00R.
Brown, William W.; and Van der Schoot, Martinus R., to Westinghouse Electric Corp. Boron control system for a nuclear power plant. 4,225,390, Cl. 176-86.00L.
Broz, Jiri: *See*—
Hebky, Jaromir; Lupinek, Vladimir; Sova, Milan; Sevcik, Bohumil; and Broz, Jiri, 4,225,604, Cl. 424-250.000.
Bruker-Physik AG: *See*—
Haas, Jorg, 4,224,804, Cl. 62-238.000.
Brunet, Roger; and Marenco, Gerard, to Constructions Navales et Industrielles de la Mediterranee. Trailer for transporting and launching floating box caissons. 4,225,280, Cl. 414-479.000.
Brunner, Hans E.: *See*—
Matter, Frank A.; and Brunner, Hans E., 4,225,092, Cl. 241-46.00B.
Brunswick Corporation: *See*—
Tremblay, Maurice H.; Manning, Robert E.; Lanoue, Gerard; and Gaiteri, Frank, Jr., 4,225,442, Cl. 210-497.100.
Buchleitner, Konrad, to Bayerische Motoren Werke Aktiengesellschaft. Motor vehicle headlight for low and high beams. 4,225,903, Cl. 362-61.000.
Buchner, Helmut, to Daimler-Benz Aktiengesellschaft. Thermally stressed heat-conducting structural part or corresponding structure part cross section. 4,224,980, Cl. 165-32.000.
Buck, Robert; and Marhofer, Gerd. Switching device, especially for electronic contactless switches, e.g. proximity switches. 4,225,748, Cl. 174-52.00R.
Buckler, Robert T.; and Schroeder, Hartmut R., to Miles Laboratories, Inc. Chemiluminescent naphthalene-1,2-dicarboxylic acid hydrazide-labeled polypeptides and proteins. 4,225,485, Cl. 260-112.00B.
Buehler-Miag GmbH: *See*—
Rusch, Friedrich-Wilhelm; Gartner, Johannes; and Faist, Walter, 4,225,093, Cl. 241-76.000.
Buettner, Carl F.; and Hill, John S. Vehicle bumpers with collapsible parts. 4,225,167, Cl. 293-120.000.
Buff, Paul C. Voltage controlled amplifier. 4,225,794, Cl. 307-229.000.
Buhler, Ulrich; and Heinrich, Ernst, to Cassella Aktiengesellschaft. Process for the manufacture of 2,6-dichloropyridine derivatives. 4,225,716, Cl. 546-286.000.
Bulla, Beatrice. Reserve fibre sliver feeding apparatus. 4,224,719, Cl. 19-157.000.
Bureaud, Rene: *See*—
Halldorson, Jacob T.; and Bureaud, Rene, 4,225,094, Cl. 241-79.000.
Burkett, Jerry D., to Ecolaire Incorporated. Centrifugal fan air control system. 4,225,289, Cl. 417-3.000.
Burroughs Corporation: *See*—
Garrison, Lilburn H., 4,225,378, Cl. 156-608.000.
Looschen, Floyd W., 4,225,752, Cl. 370-1.000.
Schwartz, Sidney J.; and Hsin, Chung H., 4,225,944, Cl. 365-15.000.
Stokes, Richard A., 4,225,920, Cl. 364-200.000.
Vinson, Mark A., 4,225,879, Cl. 357-55.000.
Burroughs Wellcome Co.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,225,710, Cl. 544-236.000.
Burton, John H.: *See*—
Scott, F. Brantley; and Burton, John H., 4,224,934, Cl. 128-79.000.
Burton, Perry E., to Opelika Manufacturing Corp. Cutting and hemming system. 4,224,886, Cl. 112-121.150.
Busch, Dennis G., to International Business Machines Corporation. Display system for horizontally segmenting text. 4,225,943, Cl. 364-900.000.
Butler, John P.: *See*—
LeRoy, Rodney L.; Hammerli, Martin; and Butler, John P., 4,225,402, Cl. 204-129.000.
Buttner, Horace J. Strand actuator for pushbutton switch. 4,225,764, Cl. 200-159.00R.
C.P. Clare International, N.V.: *See*—
DeMaesschalck, Etienne; and Geelen, Evrard, 4,225,836, Cl. 335-153.000.
C. Sherman Johnson Co., Inc.: *See*—
Johnson, Curtiss S., Jr., 4,224,890, Cl. 114-109.000.
Cagle, George C.; and Weeren, Eric K., to Rockwell International Corporation. Detection means for providing multiple baud values per individual baud period of a carrier signal to obviate baud timing ambiguities. 4,225,964, Cl. 375-86.000.
Calgon Corporation: *See*—
Dixon, Kenneth W., 4,225,445, Cl. 252-8.55C.
Calumet Industries, Inc.: *See*—
Arnold, Jerry D.; Fair, Harry J.; Fair, Laura V.; and Berry, Johnny D., 4,225,446, Cl. 252-33.200.
Canada-Cities Service, Ltd.: *See*—
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.
Trevoy, Lloyd; and Maskwa, Alvin, 4,225,422, Cl. 209-2.000.
Canadian Department of National Defence: *See*—
Couture, Joseph E. G.; and Roy, Joseph N. A., 4,225,368, Cl. 149-19.900.
Canadian Patents and Development Limited: *See*—
Beaudoin, James J.; and Sereda, Peter J., 4,225,353, Cl. 106-275.000.
Canon Kabushiki Kaisha: *See*—
Hirano, Reiji; Mochizuki, Koichi; Yasui, Tokio; and Shimazu, Jyoji, 4,225,932, Cl. 364-710.000.
Shimizu, Ichiro, 4,225,219, Cl. 354-25.000.
Carborundum Company, The: *See*—
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,225,467, Cl. 252-478.000.
Swiatek, Henry J., 4,225,321, Cl. 51-295.000.
Carey, Sam H., Jr. Combination inner flea-tick collar and outer protective collar, for animals. 4,224,901, Cl. 49-106.000.
Carl Munters-EUROFORM: *See*—
Kauschke, Michael, 4,225,540, Cl. 261-112.000.
Carleson, Donald V. Electronic signalling device to alert CB radio equipped vehicles. 4,225,821, Cl. 455-73.000.
Carley, Harold E.: *See*—
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., 4,225,723, Cl. 548-341.000.
Carlson, Harold G., to General Electric Company. Apparatus and method for reducing overvoltage transients on the outputs of a VSCF system. 4,225,911, Cl. 363-50.000.
Carolina Biological Supply Company: *See*—
Flagg, Raymond O.; and Franks, Richard L., 4,224,898, Cl. 119-1.000.
Carr, Robert K. Skateboard apparatus. 4,225,145, Cl. 280-7.140.
Carrier Corporation: *See*—
Bacha, F. Timothy, 4,225,772, Cl. 219-137.620.
Carter, Robert A., to General Electric Company. Hair dryer. 4,225,775, Cl. 219-375.000.
Carumpalos, Constantine G., to Borden, Inc. Basic dye ink. 4,225,475, Cl. 260-25.000.
Casadio, Silvano: *See*—
Tarayre, Jean-Pierre; Cousse, Henri; Mouzin, Gilbert; Lauress-ergues, Henri; and Casadio, Silvano, 4,225,610, Cl. 424-270.000.

Case, James T.: *See*—
Werner, Frank D.; Kleven, Lowell A.; Case, James T.; and Bloomfield, Roger D., 4,224,928, Cl. 126-450.000.
Cashion, James E., Jr., to Pat-Chem, Inc. Method of treating fibers and fabrics. 4,225,646, Cl. 428-290.000.
Cassella Aktiengesellschaft: *See*—
Bauer, Wolfgang; and Ribka, Joachim, 4,225,492, Cl. 260-157.000.
Buhler, Ulrich; and Heinrich, Ernst, 4,225,716, Cl. 546-286.000.
Castolin S.A.: *See*—
Seifahrt, Horst, 4,225,768, Cl. 219-76.140.
Caterpillar Tractor Co.: *See*—
Maier, Siegfried, 4,225,358, Cl. 106-90.000.
Rice, Stuart L., 4,225,365, Cl. 148-36.000.
Cavarroc, Marcel: *See*—
Grosclaude, Gerard; Regnier, Jean; and Cavarroc, Marcel, 4,224,865, Cl. 99-453.000.
Cecil, Howard E.: *See*—
Kutik, Louis F.; and Cecil, Howard E., 4,225,060, Cl. 222-189.000.
Celanese Corporation: *See*—
Hicks, Darrell D., 4,225,478, Cl. 260-29.2TN.
Hicks, Darrell D., 4,225,479, Cl. 260-29.2TN.
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Process for producing new ansamycin antibiotic. 4,225,674, Cl. 435-122.000.
Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See*—
Nilles, Paul E., 4,225,341, Cl. 75-60.000.
Centro Sperimentale Metallurgico S.p.A.: *See*—
Guarino, Giovanni; and Praitoni, Alberto, 4,225,343, Cl. 75-130.00R.
Cerberus AG: *See*—
Zetting, Alois; and Kopfli, Markus, 4,225,859, Cl. 340-566.000.
Cha, Chang Y., to Occidental Oil Shale, Inc. Method for flattening the combustion zone in an in situ oil shale retort by the addition of fuel. 4,224,990, Cl. 166-256.000.
Chan, Hak-Foon: *See*—
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., 4,225,723, Cl. 548-341.000.
Chandler, Earl E. Apparatus for supportingly organizing and displaying miscellaneous articles. 4,225,202, Cl. 312-184.000.
Chandrasekaran, Verivada: *See*—
Wagner, Richard E.; Chandrasekaran, Verivada; and Bringhurst, Edward D., 4,225,250, Cl. 400-124.000.
Chang, Se Won. Decorative candle. 4,225,552, Cl. 264-247.000.
Chang, Tien-Lin; Kabaian, Jimmy H.; Riganati, John P.; and White, Stanley A., to Rockwell International Corporation. Non-fingerprint region indicator. 4,225,850, Cl. 340-146.30E.
Chapin, Donald W., to Garrett Corporation, The. Binary fluidic counter. 4,224,964, Cl. 137-821.000.
Chapman, Charles C.; and Hann, Paul D., to Phillips Petroleum Company. Alkylation separation process. 4,225,740, Cl. 585-719.000.
Chapman, Charles C.; and Hann, Paul D., to Phillips Petroleum Company. Parallel alkylation reactions utilizing pressured vaporous isoparaffin for indirect heat exchange with fractionators and/or HF strippers. 4,225,741, Cl. 585-719.000.
Charles, Richard J.: *See*—
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,225,356, Cl. 106-73.500.
Charzinski, Peter: *See*—
Binder, Klaus; Charzinski, Peter; Hiereth, Hermann; and Polz, Harald, 4,224,902, Cl. 123-280.000.
Chekhov, Oleg S.: *See*—
Vaschuk, Valery I.; Starikov, Gennady V.; Solomakha, Gennady P.; Chekhov, Oleg S.; Shmuilov, Nikolai G.; Beilinson, Iosif D.; and Zats, Boris S., 4,225,541, Cl. 261-114.0VT.
Chemap AG: *See*—
Muller, Hans, 4,225,441, Cl. 210-356.000.
Chemed Corporation: *See*—
Claus, Robert T.; and Frisz, William H., 4,225,471, Cl. 252-547.000.
Cheng, Paul J., to Phillips Petroleum Company. Carbon black production. 4,225,570, Cl. 423-456.000.
Chevron Research Company: *See*—
Hotten, Bruce W., 4,225,712, Cl. 544-296.000.
Chi, Hui-Neng. Hook-nail and its driving machine. 4,225,075, Cl. 227-119.000.
Chiapello, Michel: *See*—
Lefeuvre, Andre; Leconte, Gilles; and Chiapello, Michel, 4,224,907, Cl. 123-352.000.
Chiappetta, Achille F.: *See*—
Lock, Melvin N.; and Chiappetta, Achille F., 4,225,181, Cl. 297-258.000.
Chicago Automatic Machine, Inc.: *See*—
Tarzian, George M., 4,224,729, Cl. 29-240.000.
Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., to FMC Corporation. Method for supporting and uniformly heat processing a layered array of steam table trays. 4,225,626, Cl. 426-520.000.
Chivari, Ilie. Elastic coupling. 4,224,807, Cl. 64-26.000.
Choay, Patrick: *See*—
Fournier, Jean-Paul; and Choay, Patrick, 4,225,611, Cl. 424-274.000.
Choay S.A.: *See*—
Fournier, Jean-Paul; and Choay, Patrick, 4,225,611, Cl. 424-274.000.
Chown, Martin; and Farrington, Jeffrey G., to International Standard Electric Corporation. Data transmission systems. 4,225,753, Cl. 370-4.000.
Christensen, Raymond G. Jet engine. 4,224,790, Cl. 60-224.000.
Christenson, Roger M.: *See*—
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,225,480, Cl. 260-29.6NR.
Chubb & Son's Lock and Safe Company, Limited: *See*—
Sands, Raymond L., 4,224,861, Cl. 98-1.500.
Chubukov, Vladimir K.: *See*—
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; and Baskov, Jury A., 4,225,538, Cl. 261-92.000.
Chugai Seiyaku Kabushiki Kaisha: *See*—
Ochi, Kiyoshige; Matsunaga, Isao; Shindo, Minoru; and Kaneko, Chikara, 4,225,524, Cl. 260-397.200.
Ciba-Geigy, AG: *See*—
Hegar, Gert; and Riat, Henri, 4,225,709, Cl. 544-194.000.
Kangle, Purushottam J.; and Milicevic, Branimir, 4,225,313, Cl. 8-474.000.
Ciba-Geigy Corporation: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,225,616, Cl. 424-305.000.
Brechbuhler, Hans U.; Laanio, Verena; and Berrer, Dagmar, 4,225,598, Cl. 424-249.000.
Fory, Werner; Rempfler, Hermann; Pissiotas, Georg; Rohr, Otto; and Bohner, Beat, 4,225,336, Cl. 71-88.000.
Martin, Henry, 4,225,334, Cl. 71-88.000.
Pfeifer, Josef; and Peter, Heinz, 4,225,701, Cl. 528-347.000.
Rosenberger, Siegfried, 4,225,450, Cl. 252-47.500.
Ciccio, Joseph A.; Thun, Rudolf E.; and Fardy, Harry J., to Raytheon Company. Integrated circuit device package interconnect means. 4,225,900, Cl. 361-395.000.
Cihonski, John L., to El Paso Products Company. Production of high purity butadiene. 4,225,738, Cl. 585-506.000.
CIR S.p.A. - Divisione Sasib: *See*—
Gherardi, Gianluigi, 4,225,032, Cl. 198-443.000.
Citizen Watch Co. Ltd.: *See*—
Sekine, Mitsuo; and Yamaguchi, Sizuo, 4,225,824, Cl. 328-63.000.
Claar, James A.: *See*—
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,225,480, Cl. 260-29.6NR.
Clarke, Lloyd E. Portable drawing apparatus. 4,224,742, Cl. 33-443.000.
Claus, Robert T.; and Frisz, William H., to Chemed Corporation. Cleaning composition containing mineral spirits alkanolamide, and oleyl dimethylamine oxide. 4,225,471, Cl. 252-547.000.
Clausing, Dale R.: *See*—
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., 4,225,113, Cl. 251-306.000.
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., 4,225,114, Cl. 251-308.000.
Clebant, Jean C., to Societe Europeenne de Propulsion. Flexible connection device. 4,224,723, Cl. 24-263.00R.
Clerk, Ernest J. Carburettor for air and liquid fuel under pressure for internal combustion engines. 4,224,904, Cl. 123-445.000.
Climax France S.A.: *See*—
Darves, Maurice; and Martinet, Roland, 4,224,957, Cl. 137-270.000.
Cline, Warren K.; McCarty, Stuart W.; and Owens, William F., Jr., to Olin Corporation. High porosity carbon coated cigarette papers. 4,225,636, Cl. 427-243.000.
Cobb, Raymond L., to Phillips Petroleum Company. Pyrolysis of N-substituted-1-cyclohexene-1,2-dicarboximides and hydrolysis of product to pyromellitic anhydride. 4,225,505, Cl. 260-346.300.
Cockett, Keith R. F.: *See*—
Lewis, David M.; and Cockett, Keith R. F., 4,225,312, Cl. 8-115.600.
Cohen, Jonathan. Inflatable expansible surgical pressure dressing. 4,224,945, Cl. 128-325.000.
Cohnen, Wolfgang: *See*—
Eimers, Erich; Dhein, Rolf; and Cohnen, Wolfgang, 4,225,483, Cl. 260-45.80A.
Cojan, Yves, to Thomson-CSF. Display instrument using optical collimation. 4,225,215, Cl. 350-174.000.
Cole, Martin T.; and Strahan, Graeme R., to I.E.I. Proprietary Limited. Doppler intrusion detector with dual phase processing. 4,225,858, Cl. 340-554.000.
Colell, Hans; and Hetmann, Richard, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Theft-proof system for motor vehicles. 4,225,008, Cl. 180-287.000.
Colpitts, Ralph W.; and Wendt, Jens H., to Polythetics, Inc. Prosthetic denture prepared from polyurethane elastomer. 4,225,696, Cl. 528-76.000.
Colt Industries Operating Corp.: *See*—
Bier, Kenneth C.; and Miller, Robert J., 4,224,908, Cl. 123-438.000.
Dougherty, Michael; and Wakeman, Russell J., 4,225,536, Cl. 261-69.00R.
Columbus, Peter S.; and Anderson, John, to Borden, Inc. Acrylic latex cove base cement. 4,225,496, Cl. 260-29.60M.
Comberiati, Joseph R.; Locke, Charles D.; and Kamath, Krishna I., to United States of America, Energy. Method for enhanced oil recovery. 4,224,992, Cl. 166-273.000.
Commissariat a l'Energie Atomique: *See*—
Barraud, Andre; Gras, Roger; and Vandevyver, Michel, 4,224,896, Cl. 118-402.000.
Boiside, Gilbert; and Boissier, Alain, 4,225,232, Cl. 356-246.000.
Ducos, Maurice; Manfredi, Pierre; Petel, Maurice; and Portal, Guy, 4,225,785, Cl. 250-336.000.

Le Gardeur, Rene, 4,225,806, Cl. 315-5.000.

Commonwealth Scientific & Industrial Research Organization: *See*—
Grigg, Geoffrey W.; and Sasse, Wolfgang H. F., 4,225,588, Cl. 424-177.000.

Compagnie d'Etudes et de Realisations de Cybernetique Industrielle: *See*—
Bosser, Stephane; and Heitz, Pierre, 4,224,968, Cl. 141-284.000.

Compagnie Generale d'Automatisme: *See*—
Jacoub, Michel; and Nourigat, Gerard, 4,225,780, Cl. 235-449.000.

Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Bernard, Solange; Lajotte, Dominique; Michelon, Francois; and Sourgens, Jacques, 4,225,754, Cl. 179-81.00B.
Faye, Jean-Claude, 4,225,832, Cl. 333-16.000.

Compagnie Internationale pour l'Informatique: *See*—
Plotto, Michel, 4,225,891, Cl. 360-103.000.

Computer Microfilm International Corporation: *See*—
Smith, David L., 4,225,217, Cl. 353-120.000.

Comte, Georges, to Les Cables de Lyon. Helical circular wave guide having low loss around curves and over a wide frequency band. 4,225,833, Cl. 333-242.000.

Concast Incorporated: *See*—
Cygler, Michael; Cuomo, Joseph L.; and Poran, Michael, 4,224,977, Cl. 164-82.000.

Concordia Fluidtechnik GmbH: *See*—
Stahle, Kurt, 4,224,963, Cl. 137-897.000.

Conforti, Frederick J., to Pittway Corporation. Sensitivity controlled dual input fire detector. 4,225,860, Cl. 340-629.000.

Conners, John P.: *See*—
Beadle, Bruce R.; Conners, John P.; and Larson, Michael E., 4,225,918, Cl. 364-200.000.

Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, to Warner-Lambert Company. Process for the production of 2-(1H-tetrazol-5-yl)-9-hydroxy-1-oxo-1H-naphtho-(2,1-b) pyran and intermediates therefor. 4,225,722, Cl. 548-253.000.

Conrad, William A.: *See*—
Hansen, Lee A.; and Conrad, William A., 4,224,784, Cl. 56-16.900.

Constructions Navales et Industrielles de la Mediterranee: *See*—
Brunet, Roger; and Marenco, Gerard, 4,225,280, Cl. 414-479.000.

Conte, Daniel. Extension lamp apparatus. 4,225,910, Cl. 362-376.000.

Continental Group, Inc., The: *See*—
Grubman, Alan A., 4,225,047, Cl. 209-544.000.

Cook, James A., Jr., to PPG Industries, Inc. Purification of metachloronitrobenzene. 4,225,518, Cl. 568-937.000.

Coone, Malcolm G., to Lynos, Inc. Method and apparatus for coupling engagement of misalignable flanges. 4,225,264, Cl. 403-337.000.

Cooper, Anthony R.: *See*—
Booth, Robin G.; and Cooper, Anthony R., 4,225,432, Cl. 260-144.000.

Copal Company Limited: *See*—
Saito, Toshihisa; and Inoue, Nobuyoshi, 4,225,221, Cl. 354-234.000.

Coppi, Deborah L., to Velsicol Chemical Corporation. Dioxolane substituted acetanilids. 4,225,335, Cl. 71-88.000.

Corbin-Gentry, Inc.: *See*—
Hanagan, Michael W.; and Schoeck, Donald I., 4,225,183, Cl. 297-417.000.

Corcordia Fluidtechnik GmbH: *See*—
Stahle, Kurt, 4,225,111, Cl. 251-87.000.

Cornell Research Foundation, Inc.: *See*—
Scott, Norman R.; and Marshall, Rick, 4,224,949, Cl. 128-734.000.

Cosmopulos, Stavros. Domino type game apparatus. 4,225,139, Cl. 273-294.000.

Cosyns, Jean; and Gremillon, Marc, to Institut Francais du Petrole. Process for manufacturing a group VIII noble metal catalyst of improved resistance to sulfur, and its use for hydrogenating aromatic hydrocarbons. 4,225,461, Cl. 252-439.000.

Cotey, John. Ova detector assembly. 4,225,423, Cl. 209-3.000.

Councill, Edwin D.; Kelly, H. Janet; and Lee, Hua-Tung, to International Business Machines Corporation. Three phase line-addressable serial-parallel-serial storage array. 4,225,947, Cl. 365-238.000.

Country Log Homes, Inc.: *See*—
Bene, Robert; and Fortini, Joseph A., 4,224,772, Cl. 52-233.000.

Cousse, Henri: *See*—
Tarayre, Jean-Pierre; Cousse, Henri; Mouzin, Gilbert; Lauressergues, Henri; and Casadio, Silvano, 4,225,610, Cl. 424-270.000.

Couture, Joseph E. G.; and Roy, Joseph N. A., to Canadian Department of National Defence. Coating of granulated organic dyes with an epoxy. 4,225,368, Cl. 149-19.900.

Cox, Jerry W.; and Wilkes, Mulkey C., to PPG Industries, Inc. Reclamation of spent glycol by treatment with alkali metal hydroxide and distillation. 4,225,394, Cl. 203-37.000.

Cox, Walter H., to Vickers Limited. Transit isolator. 4,224,936, Cl. 128-132.00R.

Crabtree, Luther L.: *See*—
Osborne, William P.; Hartman, William F.; and Crabtree, Luther L., 4,225,976, Cl. 455-226.000.

Cragoe, Edward J., Jr.; Lee, Ta-jyh; and Bicking, John B., to Merck & Co., Inc. Interphenylene 9-thia-11-oxo-12-aza-prostanoic acids. 4,225,609, Cl. 424-270.000.

Cramer, Frank B.; and Semar, J. Lawrence. Wrist borne pulse meter/chronometer. 4,224,948, Cl. 128-690.000.

Crandell, Robert A., to University of Illinois Foundation, The. Vaccine for equine rhinopneumonitis. 4,225,582, Cl. 424-89.000.

Crawford, Peter F., to Automotive Products Limited. Friction clutch. 4,225,025, Cl. 192-70.200.

Cremer, Heinrich: *See*—
Teichmann, Paul; Beneke, Wolfgang; Cremer, Heinrich; and Ludwig, Guy, 4,224,717, Cl. 19-98.000.

Crisci, Harry, to Northern Engineering & Plastics Corporation. Blow molding devices. 4,225,303, Cl. 425-525.000.

Crivello, James V., to General Electric Company. Low temperature curable organic resin compositions. 4,225,691, Cl. 526-192.000.

Croley, Thomas E., to Willamette Industries, Inc. Knocked-down polygonal container with set-up contour-forming flaps. 4,225,078, Cl. 229-41.00C.

Crooks, James W., to Wallace Murray Corporation. Multi-speed temperature responsive fan clutch. 4,224,841, Cl. 74-801.000.

Croswhite, Howard L., to Ford Motor Company. Four speed overdrive power transmission with bidirectional reaction brake band servo. 4,224,837, Cl. 74-688.000.

Crowell, Russell T., to United States of America, National Aeronautics and Space Administration. System for refurbishing and processing parachutes. 4,224,810, Cl. 68-3.00R.

Cruchelow, Marilyn; and Cruchelow, Wayne L. Pet shelter. 4,224,899, Cl. 119-19.000.

Cruchelow, Wayne L.: *See*—
Cruchelow, Marilyn; and Cruchelow, Wayne L., 4,224,899, Cl. 119-19.000.

Cruse, John W. Apparatus for sowing seeds in suspension. 4,224,882, Cl. 111-7.000.

Cseh, Laszlo. Apparatus for swimming pool water surface cleaning. 4,225,436, Cl. 210-169.000.

Cuatrecasas, Pedro; and Parikh, Indu. Affinity chromatography of *Vibrio cholerae* enterotoxin-ganglioside polysaccharide and the biological effects of ganglioside-containing soluble polymers. 4,225,487, Cl. 260-121.000.

Cullen, Walter P.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,225,674, Cl. 435-122.000.

Cummins Engine Company, Inc.: *See*—
Woollenweber, William E., 4,224,794, Cl. 60-602.000.

Cuomo, Joseph L.: *See*—
Cygler, Michael; Cuomo, Joseph L.; and Poran, Michael, 4,224,977, Cl. 164-82.000.

Curby, Rockford C.: *See*—
Tiefert, Karl H.; and Curby, Rockford C., 4,224,734, Cl. 29-583.000.

Curley, John V.: *See*—
Tector, Nancie; and Curley, John V., 4,225,052, Cl. 220-22.000.

Custom Systems Associates, Inc.: *See*—
Fling, James L., 4,224,959, Cl. 137-343.000.

Cygler, Michael; Cuomo, Joseph L.; and Poran, Michael, to Concast Incorporated. Mold assembly and method for continuous casting. 4,224,977, Cl. 164-82.000.

Cymbalisty, Lubomyr M.: *See*—
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.

D. L. Auld Company, The: *See*—
Waugh, Robert E., 4,225,638, Cl. 427-331.000.

Dabrowski, John E., to General Electric Company. Selective ortho-alkylation of phenolic compounds with an alkane in the presence of a supported nickel oxide catalyst. 4,225,732, Cl. 568-794.000.

Dagnelie, Jean-Paul: *See*—
Rahuel, Jean-Claude; and Dagnelie, Jean-Paul, 4,225,750, Cl. 178-19.000.

Dahlberg, John R.; and DeTorre, Robert P., to PPG Industries, Inc. Method of simultaneously opening two scores transverse to one another. 4,225,070, Cl. 225-2.000.

Dahlin, Robert K., to United States of America, Army. Simplified system for estimating pulse radar doppler frequency. 4,225,863, Cl. 343-7.500.

Daigle, Donald J.: *See*—
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,225,512, Cl. 260-583.00E.

Daimler-Benz Aktiengesellschaft: *See*—
Binder, Klaus; Charzinski, Peter; Hiereth, Hermann; and Potz, Harald, 4,224,902, Cl. 123-280.000.
Breitschwerdt, Werner; and Langenbeck, Andreas, 4,225,069, Cl. 224-328.000.
Buchner, Helmut, 4,224,980, Cl. 165-32.000.
Happel, Robert, 4,224,906, Cl. 123-90.150.
Krzok, Peter, 4,225,185, Cl. 297-468.000.

Dale, James G.: *See*—
Howard, Roy S.; Hodgson, Donald; Dale, James G.; and Hall, Clifford T. M., 4,225,389, Cl. 176-40.000.

Dalessio, Frederick F.: *See*—
Price, Douglas R.; Dalessio, Frederick F.; and Jones, Phillip H., 4,225,949, Cl. 367-96.000.

Dalton, Augustine I., Jr.; Doran, Henry J.; and Murray, Robert D. H., to Air Products and Chemicals, Inc. Selective catalytic oxidation of unsaturated alcohols to carbonyl compounds. 4,225,694, Cl. 562-506.000.

Dandliker, Rene; Lanz, Otto; and Mottier, Francois, to BBC Brown Boveri & Company Limited. Method and apparatus for adjusting the relative positioning of planar transparent objects, such as the glass plates of a liquid crystal display, and a liquid crystal display adjusted by the method and apparatus. 4,225,241, Cl. 356-400.000.

D'Andrade, Bruce M.; and Tsui, Kwok W. Target-type shooting toy. 4,225,140, Cl. 273-356.000.

Danielsen, Berne E.: *See*—
Saint-Pierre, Raymond M.; and Danielsen, Berne E., 4,224,759, Cl. 46-105.000.

Dantzig, Jonathan A.; Tyler, Derek E.; and Milici, Richard C., to Swiss Aluminium Ltd. Method for fabricating a sparger plate for use in degassing of molten metal. 4,225,544, Cl. 264-43.000.

Dareing, Donald W., to Maurer Engineering Inc. Method and apparatus for connecting a flowline to an offshore installation. 4,225,270, Cl. 405-168.000.

Dart Industries Inc.: *See*—
Allan, John L. H.; Readio, Philip D.; Bengali, Ajay M.; and Zuendt, Richard F., 4,225,350, Cl. 106-14.120.
Zuendt, Richard F.; Bengali, Ajay M.; Readio, Philip D.; and Allan, John L. H., 4,225,351, Cl. 106-14.120.

Darves, Maurice; and Martinet, Roland, to Climax France S.A. Modular system for obtaining pneumatic logic circuits. 4,224,957, Cl. 137-270.000.

Datz, Rudolf; and Riegger-Dreher, Helena, to BBC Brown Boveri & Company Limited. Feed-water heater for steam power plants. 4,224,981, Cl. 165-114.000.

Daubendiek, Richard L.: *See*—
Locker, David J.; and Daubendiek, Richard L., 4,225,666, Cl. 430-569.000.

Daughenbaugh, Gerald A.: *See*—
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.

Davidson, Richard W.; Rando, Joseph F.; and Teach, Ted L., to Spectra-Physics, Inc. Laser guidance system for crop spraying aircraft. 4,225,226, Cl. 356-1.000.

Davies, Daivd H.; and Norris, Geoffrey L. F., to Imperial Chemical Industries Limited. Growth promotion. 4,225,593, Cl. 424-185.000.

Davis, Charles W., to Stanadyne, Inc. Timing control for fuel injection pump. 4,224,916, Cl. 123-502.000.

Davis, Charles W.: *See*—
Bouwkamp, Gerald R.; Davis, Charles W.; Gilbert, Wesley B.; and Donahue, Charles J., 4,225,291, Cl. 417-214.000.

Davis, Donald J. Cassette holder. 4,225,201, Cl. 312-125.000.

Davis, John F., Jr., to Harris Corporation. Stabilization circuit for transistor RF power amplifiers. 4,225,827, Cl. 330-296.000.

Davis, Robert H.: *See*—
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., 4,225,447, Cl. 252-34.700.

Davis, William F.; and Shumway, Howard G., to Motorola, Inc. High density analog-to-binary coded decimal converter. 4,225,854, Cl. 340-347.0AD.

De Pruines Iseco: *See*—
Bellavoine, Robert, 4,225,204, Cl. 312-236.000.

Dean, Norman L.: *See*—
Perettie, Donald J.; and Dean, Norman L., 4,225,718, Cl. 546-345.000.

DeBliek, John A.: *See*—
Hay, Robert A., II; and DeBliek, John A., 4,225,171, Cl. 294-65.500.

de Denus, Berenice Isabelle: *See*—
de Denus, Robert N., 4,225,571, Cl. 423-561.00A.

de Denus, Robert N., to de Denus, Berenice Isabelle; Smith, David Vivian; and Smith, Jennifer May. Electrowinning of metal from sulphide ores and recovery of water soluble sulphides. 4,225,571, Cl. 423-561.00A.

Deere & Company: *See*—
Dobberpuhl, Dale R., 4,224,996, Cl. 172-42.000.
Hoch, John J., 4,224,785, Cl. 56-17.400.
Kirkpatrick, Kenneth L.; Spicer, Dalton H.; and Oka, Ken K., 4,224,783, Cl. 56-13.500.
Michael, Thomas H., 4,225,036, Cl. 198-840.000.
Taute, Mark A.; Treichel, Richard; Marks, Jeffrey C.; and Mattson, Timothy J., 4,225,151, Cl. 280-661.000.
Tone, Melvin N.; Zimmer, Larry J.; and Jewett, James W., 4,224,994, Cl. 169-9.000.

Delaey, Luc: *See*—
Faudou, Jean-Yves; Delaey, Luc; and Van de Mosselaer, Dirk, 4,225,051, Cl. 220-3.000.

Delagi, Richard G.: *See*—
McBride, Lyle E., Jr.; and Delagi, Richard G., 4,225,213, Cl. 350-96.200.

Delbag-Luftfilter GmbH: *See*—
Stiehl, Hans-Henrich, 4,225,328, Cl. 55-378.000.

De Longe, Harry C., to PepsiCo, Inc. Process and apparatus for the treatment of aqueous waste materials. 4,225,431, Cl. 210-617.000.

Delport, Marthienes J. Foot-wear. 4,224,750, Cl. 36-91.000.

DeLuca, Hector F., to Wisconsin Alumni Research Foundation. Method for treating calcium imbalance and improving calcium absorption in mammals. 4,225,596, Cl. 424-236.000.

DeMaesschalck, Etienne; and Geelen, Evrard, to C.P. Clare International, N.V. Magnetic relay. 4,225,836, Cl. 335-153.000.

Denisov, Sergei I.: *See*—
Pokhodnya, Igor K.; Ananin, Vladimir P.; Golovko, Vladimir N.; and Denisov, Sergei I., 4,225,773, Cl. 219-146.300.

Denka Chemical Corporation: *See*—
O'Neal, Hubert R., 4,225,682, Cl. 525-76.000.

Dennehey, T. Michael; and Dixon, Dwight, to Baxter Travenol Laboratories, Inc. Copolyester composition containing poly(ethylene cyclohexane dimethylene terephthalate), having superior solvent and impact resistance. 4,225,688, Cl. 525-444.000.

Denney, James J., to United States of America, Air Force. Apparatus for, and method of, plunge grinding. 4,224,768, Cl. 51-209.00R.

Denning, Charles E.; and Schick, Lloyd A., to Miles Laboratories, Inc. Combined radioimmunoassay for triiodothyronine and thyroxine. 4,225,576, Cl. 424-1.000.

DePaul, Harry V.; Fondots, David C.; Mascioli, Rocco L.; and Panchak, John R., to Air Products and Chemicals, Inc. Stabilization of flame retardant premix for polyurethane. 4,225,453, Cl. 252-182.000.

Derby, Norwin C.: *See*—
Williamson, Robert R.; and Derby, Norwin C., 4,224,970, Cl. 150-1.000.

Derryberry, S. Wayne. Portable hunting blind. 4,224,754, Cl. 43-1.000.

Des Roches, Emile A. Power saw guiding apparatus. 4,224,855, Cl. 83-745.000.

Detection Systems, Inc.: *See*—
Perlman, David E., 4,225,786, Cl. 250-342.000.

DeToma, Michele. Pincer-like tool, especially for collecting organic dejections of animals to enclose them in a container. 4,225,169, Cl. 294-1.0BA.

DeTorre, Robert P.: *See*—
Dahlberg, John R.; and DeTorre, Robert P., 4,225,070, Cl. 225-2.000.

deTorres, Pablo D., to General Electric Company. Novel halobisphenolethylene polycarbonate-polyetheramide-imide blends. 4,225,687, Cl. 525-423.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Amann, Herbert; Morlock, Gerhard; and Trautwein, Hellmut, 4,225,703, Cl. 528-480.000.
Rothbuhr, Lothar; Sroka, Werner; and Fritz, Walter, 4,225,416, Cl. 208-23.000.

deVries, Egbert, to Quad Corporation. Process for performing multiple chemical reactions. 4,225,566, Cl. 423-210.000.

Dhein, Rolf: *See*—
Eimers, Erich; Dhein, Rolf; and Cohnen, Wolfgang, 4,225,483, Cl. 260-45.80A.

Dial-A-Firm, Inc.: *See*—
Young, Gary A.; and Swenson, Emil S., 4,224,706, Cl. 5-449.000.

Diamond Shamrock Corporation: *See*—
Boutier, Jacques L.; Grammont, Paul D. A.; and Herbin, Jean E. E., 4,225,677, Cl. 521-31.000.
Schmidt, William T.; and Gammon, Charles T., 4,225,456, Cl. 252-321.000.

Diaz-Cano, Juan A. Heels for footwear. 4,224,749, Cl. 36-35.00R.

Dickey-john Corporation: *See*—
Steffen, David E., 4,225,930, Cl. 364-555.000.

Dickey, Leland C., to InterNorth, Inc. Contracted fibrous overwrap method for thermoplastic coated article. 4,225,370, Cl. 156-86.000.

DIEHL, Firma: *See*—
Meisner, Alfred; and Arnold, Werner F., 4,225,776, Cl. 219-492.000.

Diehl, Robert J.; and Godare, William L., to W-K-M Wellhead Systems, Inc. Steam separator with variably sized rectangular inlet opening. 4,225,325, Cl. 55-191.000.

Diesel Kiki Co., Ltd.: *See*—
Takefuta, Hideyasu; Iwata, Kohki; and Yamaguchi, Toshio, 4,225,027, Cl. 192-84.00T.

Dieterich, Dieter, to Bayer Aktiengesellschaft. Stabilized preparations of aromatic isocyanatosulphonic acids. 4,225,532, Cl. 260-453.0SP.

Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased (by Grimm, Ingrid A., heiress); Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, to Akademie der Wissenschaften der DDR. Perfluoroolefin and perfluoroparaffin mixture and process for making same. 4,225,404, Cl. 204-163.00R.

DiMatteo, Paul L., to Solid Photography Inc. Surface coating for optical inspection. 4,225,228, Cl. 356-36.000.

Dimmig, Daniel A.: *See*—
Ferren, Richard A.; Dimmig, Daniel A.; and Grigger, John C., 4,225,482, Cl. 260-29.60F.

Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, to Hoechst Aktiengesellschaft. Carbon carrier suitable for use in electrothermal reduction processes, and process for making it. 4,225,347, Cl. 75-257.000.

Divisek, Jiri; and Mergel, Jurgen, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method for generating hydrogen and oxygen. 4,225,401, Cl. 204-129.000.

Dixon, Dwight: *See*—
Dennehey, T. Michael; and Dixon, Dwight, 4,225,688, Cl. 525-444.000.

Dixon, Kenneth W., to Calgon Corporation. Polymers for acid thickening. 4,225,445, Cl. 252-8.55C.

Dobberpuhl, Dale R., to Deere & Company. Control mechanism for a walk-behind rotary tiller. 4,224,996, Cl. 172-42.000.

Dobkin, Robert C., to National Semiconductor Corporation. Integrated circuit on chip trimming. 4,225,878, Cl. 357-51.000.

Dobler, Peter: *See*—
Schoettle, Klaus; Lewin, Helmut; Hoffmann, Werner; Dobler, Peter; and Gliniorz, Lothar, 4,225,099, Cl. 242-192.000.

Dobrosielski, Stephen S.: *See*—
Johnston, Robert J.; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,225,765, Cl. 200-307.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.
Colell, Hans; and Hetmann, Richard, 4,225,008, Cl. 180-287.000.

Dr. Johannes Heidenhain GmbH: *See*—
Schwefel, Ernst, 4,225,931, Cl. 364-577.000.
Dr. Thomastik und Mitarbeiter Ohg: *See*—
Infeld, Peter, 4,224,857, Cl. 84-302.000.
Dokiya, Masayuki: *See*—
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Dola, Frank P., to AMP Incorporated. Liquid tight connector. 4,225,162, Cl. 285-161.000.
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Donahue, Charles J.: *See*—
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Donohue, Paul C.; and Marcus, Sanford M., to Du Pont de Nemours, E. I., and Company. Temperature coefficient of resistance modifiers for thick film resistors. 4,225,468, Cl. 252-509.000.
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Dorina Nahmaschinen GmbH: *See*—
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Erickson, Chad S.; and Dornbush, David A., 4,224,743, Cl. 34-219.000.
Dostoomian, Ashod S.; and Lord, Joseph S., to Vanzetti Infrared & Computer Systems Incorporated. Band-ratio radiometer. 4,225,230, Cl. 356-45.000.
Doty, Charles R., Jr.; Muehldorf, Eugen I.; and Shah, Himanshu G., to International Business Machines Corporation. Testing macros embedded in LSI chips. 4,225,957, Cl. 371-15.000.
Dougall, Robert K., to Keene Corporation. Grease and cup retained unitized thrust bearing and method of making same. 4,225,200, Cl. 308-235.000.
Dougherty, Michael; and Wakeman, Russell J., to Colt Industries Operating Corp. Power valve. 4,225,536, Cl. 261-69.00R.
Douglas, Lawrence M., to Polaroid Corporation. Camera having manually operable dark slide ejection apparatus. 4,225,220, Cl. 354-86.000.
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Hay, Robert A., II; and DeBliek, John A., 4,225,171, Cl. 294-65.500.
McReynolds, Kent B., 4,225,383, Cl. 162-156.000.
Perettie, Donald J.; and Dean, Norman L., 4,225,718, Cl. 546-345.000.
Tsang, Floris Y., 4,225,395, Cl. 204-1.00T.
Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,225,406, Cl. 204-181.00C.
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McGuire, Robert C.; Selder, Albertus G.; and Hutchison, Mark A., 4,225,188, Cl. 299-64.000.
Drexler, Jerome, to Drexler Technology Corporation. Method for making thermochromic photomasks. 4,225,659, Cl. 430-5.000.
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Drexler, Jerome, 4,225,659, Cl. 430-5.000.
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Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, to Rhone-Poulenc Industries. Daunorubicin derivatives. 4,225,589, Cl. 424-180.000.
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Dufft, Jurgen, to Girling Limited. Antiskid control valve. 4,225,192, Cl. 303-24.00A.
Dugdale, Ronald A., to United Kingdom Atomic Energy Authority. Methods of depositing materials on substrates. 4,224,897, Cl. 118-719.000.
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Dumoulin, Rasma, heir: *See*—
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Duncan, Dennis A., to United States of America, Energy. Process for hydrocracking carbonaceous material to provide fuels or chemical feed stock. 4,225,414, Cl. 208-8.00R.
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Griffith, Donald L.; and Dunham, Lawrence A., 4,225,760, Cl. 200-83.00R.
Dunsmore, Howard L. Method and apparatus for reducing the rate of heat transfer. 4,224,771, Cl. 52-171.000.
Dupitier, Michel: *See*—
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Brixner, Lothar H., 4,225,653, Cl. 428-539.000.
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Hammer, Clarence F.; and Sinclair, Harold K., 4,225,476, Cl. 260-27.00R.
Heiberger, Philip, 4,225,473, Cl. 260-22.0CB.
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Sauers, Richard F., 4,225,521, Cl. 260-941.000.
Schadt, Frank L., III, 4,225,665, Cl. 430-529.000.
Duwel, Klaus R.: *See*—
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Dziewulski, Ted; and Kay, Arthur H., to Phillips Petroleum Company. Container having attached tray. 4,224,764, Cl. 47-71.000.
E. R. Squibb & Sons, Inc.: *See*—
Ondetti, Miguel A., 4,225,495, Cl. 260-244.400.
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Betts, William L.; and Blackman, L. Ray, 4,225,956, Cl. 370-62.000.
Earsley, Melvin L. Ball separator for ball bearing. 4,225,199, Cl. 308-201.000.
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Frishberg, Mark D., 4,225,719, Cl. 548-194.000.
Locker, David J.; and Daubendiek, Richard L., 4,225,666, Cl. 430-569.000.
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Morris, Don L.; and McCollum, Anthony W., 4,225,726, Cl. 560-238.000.
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Hammerschlag, Peter G., 4,224,776, Cl. 52-645.000.
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Eberle, William J., to General Battery Corporation. Acid-proof conveyor. 4,225,037, Cl. 198-861.000.
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Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, 4,225,347, Cl. 75-257.000.
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Sturm, Gerhard, 4,225,285, Cl. 415-207.000.
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Ecolaire Incorporated: *See*—
Burkett, Jerry D., 4,225,289, Cl. 417-3.000.
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Papay, Andrew G.; and O'Brien, Joseph P., 4,225,449, Cl. 252-46.600.
Egly, Robert A. Magnetic disk storage case. 4,225,038, Cl. 206-45.180.
Eimers, Erich; Dhein, Rolf; and Cohnen, Wolfgang, to Bayer Aktiengesellschaft. Boric acid esters and oxetanes for stabilizing phosphite-free polycarbonates. 4,225,483, Cl. 260-45.80A.
Eisele, John F.: *See*—
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Eisenmann, Siegfried; and Hancke, Dieter, to Fuerstlich Hohenzollernsche Huettenverwaltung, Lauchertal. Axial piston machine. 4,224,859, Cl. 91-488.000.
El Paso Products Company: *See*—
Cihonski, John L., 4,225,738, Cl. 585-506.000.
Electrolyser Corporation Ltd., The: *See*—
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Elhaus, Friedrich W.; and Stucker, Peter, to Elhaus, Friedrich W., by said Peter Stucker. Method of and an apparatus for producing extrusion profiles. 4,224,816, Cl. 72-9.000.
Elhaus, Friedrich W.: *See*—
Elhaus, Friedrich W.; and Stucker, Peter (said Peter Stucker assors. to), 4,224,816, Cl. 72-9.000.
Elliott, William L. Drill bit. 4,225,275, Cl. 408-229.000.
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Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,225,648, Cl. 428-336.000.

Emblidge, Frank. Pruning tool with flexible headpole connection. 4,224,739, Cl. 30-249.000.
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Emerson Electric Co.: *See—*
Magnaghi, Adriano, 4,225,800, Cl. 310-260.000.
Emhart Industries, Inc.: *See—*
Learn, Richard L., 4,225,856, Cl. 340-384.00E.
Lipp, Ellis P.; and Petre, Mark L., 4,225,844, Cl. 338-135.000.
Lipp, Ellis P., 4,225,846, Cl. 338-198.000.
Sandler, Louis M., 4,225,896, Cl. 361-56.000.
Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, to Volkswagenwerk Aktiengesellschaft. Fuel injection apparatus. 4,224,915, Cl. 123-533.000.
Endlich, Wilhelm: *See—*
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Energy Recycling Corporation Pty. Ltd.: *See—*
Lloyd, Robert; and Turner, Maxwell J., 4,224,732, Cl. 29-463.000.
Enertec: *See—*
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Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.
Entschel, Roland; and Henzi, Beat, to Sandoz Ltd. Heterocyclyl-azophenyl dyes having a cationic group linked through a branched alkylene chain to the nitrogen atom of the coupling component radical. 4,225,490, Cl. 260-156.000.
Envirosol Systems International, Ltd.: *See—*
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Eplan, Joseph J. Hair dryer holder. 4,225,106, Cl. 248-309.00R.
Erb, Robert A., to Redmar Investors, Inc. Method of reclaiming thermoplastic materials from municipal waste and product produced thereby. 4,225,640, Cl. 428-2.000.
Erdell, John B. Flashlight magnifier attachment. 4,225,907, Cl. 362-255.000.
Erickson, Chad S.; and Dornbush, David A., to Alternative Pioneering Systems, Inc. Food dehydrating machine. 4,224,743, Cl. 34-219.000.
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Ernst, Wilhelm; and Ernst, Hubert. Storm overflow basin. 4,225,434, Cl. 210-98.000.
ESB Inc.: *See—*
Feldhake, Ralph H., 4,224,736, Cl. 29-623.200.
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Ethyl Corporation: *See—*
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Sugasawa, Fukashi; Iizuka, Haruhiko; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,224,920, Cl. 123-198.00F.
Ettema, Ernst, to Wavin B.V. Plastic tray for fruit or like products. 4,225,046, Cl. 206-511.000.
Eunipp AG: *See—*
Flisch, Hermann, 4,224,845, Cl. 82-2.700.
Eustacchio, Claudio, to Fuchs & Co. Aktiengesellschaft fur Elektro-Draht-Erzeugung und Maschinenbau. Plant for producing fired brick blanks. 4,225,301, Cl. 425-88.000.
Excelermatic Inc.: *See—*
Kraus, Charles E., 4,224,840, Cl. 74-798.000.
Expert Automation, Inc.: *See—*
Rust, Norbert, 4,224,830, Cl. 74-52.000.
Exxon Production Research Company: *See—*
Ortloff, John E., 4,225,160, Cl. 285-137.00A.
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Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,225,469, Cl. 252-518.000.
Huang, I-Der; and McCooey, Catherine, 4,225,458, Cl. 252-413.000.
van Brederode, Robert A.; and Steinkamp, Robert A., 4,225,650, Cl. 428-405.000.
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Eysel, Dieter; and Gerk, Wilfried, to Samson Aktiengesellschaft, Firma. Turning boring head with a tool for radial adjustment. 4,224,846, Cl. 82-36.00R.
Fahey, Robert J., to GTE Sylvania Incorporated. Detector circuit. 4,225,792, Cl. 307-66.000.
Fahlvik, Hans A.; and Sandquist, Kurt E., to Aktiebolaget Electrolux. Method for sterilizing articles in an autoclave. 4,225,555, Cl. 422-25.000.
Fair, Harry J.: *See—*
Arnold, Jerry D.; Fair, Harry J.; Fair, Laura V.; and Berry, Johnny D., 4,225,446, Cl. 252-33.200.
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Faist, Walter: *See—*
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Farge, Daniel: *See—*
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,225,589, Cl. 424-180.000.
Farmaceutici Geymonat Sud S.p.A.: *See—*
Gardini, Gian P.; Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, 4,225,714, Cl. 544-377.000.
Farooq, Saleem: *See—*
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Faudou, Jean-Yves; Delaey, Luc; and Van de Mosselaer, Dirk, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Containers for storing fluids under pressure. 4,225,051, Cl. 220-3.000.
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Faulstich, Marga; Jahn, Walter; Krolla, Georg; and Neuroth, Norbert, to JENAer Glaswerk Schott & Gen. Glasses having a low non-linear refractive index for laser applications. 4,225,459, Cl. 252-301.40P.
Faye, Jean-Claude, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Self-adapting equalizer. 4,225,832, Cl. 333-16.000.
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Felchlin, Hermann. Method of securing sheets or poster to a base. 4,225,369, Cl. 156-71.000.
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Feldmann, Michel; and Le Goff epouse Henaff, Jeannine. Analog-digital conversion device with surface elastic waves. 4,225,855, Cl. 340-347.0AD.
Feller, Murray F., to Wilgood Corporation. Heat meters. 4,224,825, Cl. 73-193.00R.
Ferguson, Gerald J., Jr.: *See—*
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Ferranti Limited: *See—*
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Ferren, Richard A.; Dimmig, Daniel A.; and Grigger, John C., to Pennwalt Corporation. Concentrated aqueous latex of ethylene/C_3-C_3-perfluorocarbon copolymer or terpolymer. 4,225,482, Cl. 260-29.60F.
Ferrieu, Gilbert M. M., to Telecommunications Radioelectriques et Telephoniques T.R.T. Arrangement for processing a delta modulation signal, in particular for decoding these signals. 4,225,963, Cl. 375-28.000.
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Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.
Fiber Associates, Incorporated: *See—*
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Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,224,883, Cl. 112-10.000.
Fields, Davis S., Jr.: *See—*
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.
Fier, Raymond L. Method and apparatus for adjusting the elevation of manhole covers. 4,225,266, Cl. 404-26.000.
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Finckenor, Lawrence E., to Schering Corporation. Beclomethasone dipropionate-hexane solvate and aerosols prepared therefrom. 4,225,597, Cl. 424-243.000.
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Halasa, Adel F.; and Hall, James E., 4,225,690, Cl. 526-183.000.
Hergenrother, William L.; and Halasa, Adel F., 4,225,697, Cl. 528-168.000.
Fischer, Artur. Structural element of an assembly kit. 4,224,758, Cl. 46-23.000.
Fischer & Krecke: *See*—
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Flamemaster Corporation, The: *See*—
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Fling, James L., to Custom Systems Associates, Inc. Clamp for liquid-dispensing valve. 4,224,959, Cl. 137-343.000.
Flisch, Hermann, to Eunipp AG. Apparatus for automatically opening and closing a bar stockguide tube for a multispindle automatic lathe. 4,224,845, Cl. 82-2.700.
Flubacker, Charles H., to Artag Plastics Corporation. Computerized vending machine. 4,225,056, Cl. 221-2.000.
Flynn, Dennis E. Log sideloader. 4,225,170, Cl. 294-11.000.
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Gerow, Gordon P., 4,225,625, Cl. 426-482.000.
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Focke, Heinz; and Liedtke, Kurt, to Focke & Pfuhl. Package for cigarettes or the like and process for production of same. 4,225,040, Cl. 206-245.000.
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Ford Motor Company: *See*—
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Croswhite, Howard L., 4,224,837, Cl. 74-688.000.
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Napier, Garrett H., 4,225,397, Cl. 204-29.000.
Nordstrom, Walter A.; Brilts, Bruno, deceased; and Dumoulin, Rasma, heir, 4,225,282, Cl. 414-694.000.
Rao, V. Durga Nageswar, 4,225,354, Cl. 106-39.800.
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Fork, Werner, to J. M. Voith GmbH. Thrust generating device. 4,225,286, Cl. 416-4.000.
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Fory, Werner; Rempfler, Hermann; Pissiotas, Georg; Rohr, Otto; and Bohner, Beat, to Ciba-Geigy Corporation. Phenoxyalkyloxazolines, as selective herbicides in cereals. 4,225,336, Cl. 71-88.000.
Foster, Dudley: *See*—
Hogue, J. W.; Horner, B. Dean; and Foster, Dudley, 4,224,880, Cl. 105-422.000.
Foster, Stephen R.: *See*—
Akkerman, Neil H.; Foster, Stephen R.; and Vazquez, Gonzalo, 4,225,110, Cl. 251-58.000.
Fournier, Jean-Paul; and Choay, Patrick, to Choay S.A. Novel n-substituted benzenesulfonamide, process for its preparation and medicaments containing it. 4,225,611, Cl. 424-274.000.
Fowler, Gerald L., to General Equipment & Mfg. Co., Inc. Armature for a proximity switch. 4,225,837, Cl. 335-181.000.
Fox, David H.; and Kuhn, Robert L., to Ford Motor Company. High voltage distributor utilizing a high dielectric fluid medium. 4,225,759, Cl. 200-19.00M.
Fraleigh, Alton L. Compressible liquid container and applicator. 4,225,253, Cl. 401-9.000.
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., to United States of America, Agriculture. Ternary salts of tris(aminomethyl)phosphines and their oxides prepared by the hydrolysis of 1,3,5-triaza-7-phosphaadamantane and its oxide. 4,225,512, Cl. 260-583.00E.
Frank, Karl F. Spring loop door and window alarm switch. 4,225,857, Cl. 340-545.000.
Frank, Robert G., to PPG Industries, Inc. Glass sheet tempering apparatus. 4,225,333, Cl. 65-348.000.
Franke, Kurt, to Siemens Aktiengesellschaft. X-ray diagnostic generator comprising an inverter feeding the high voltage transformer. 4,225,788, Cl. 250-408.000.
Franks, Richard L.: *See*—
Flagg, Raymond O.; and Franks, Richard L., 4,224,898, Cl. 119-1.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,224,874, Cl. 104-12.000.
Fredin, Sture. Arrangement for covering a chip transport box. 4,225,175, Cl. 296-98.000.
Fredrickson, Paul B., to GTE Products Corporation. Pulse generator circuit triggerable by nuclear radiation. 4,225,797, Cl. 307-278.000.
Freed, Meier E.; and Potoski, John R. Tetrahydro(1H)pyrazino(1,2-A)azaquinoxalin-5(6H)-ones and derivatives thereof. 4,225,713, Cl. 544-346.000.
Freeman, George M.; and Nightingale, David E., to Texasgulf Inc. Treatment of zinc plant leach residues for recovery of the contained metal values. 4,225,342, Cl. 75-109.000.
Frei, Willi. Tubular heat exchanger. 4,224,982, Cl. 165-134.00R.
Freitag, Dieter: *See*—
Medem, Harald; Freitag, Dieter; Hespe, Hans; and Heynemann, Carl, 4,225,698, Cl. 528-176.000.
French, Hollis E.: *See*—
Berger, Michael J.; and French, Hollis E., 4,225,631, Cl. 427-54.100.
Frisbie, Donald; Frisbie, Larry D.; and Olson, Joel J. Article orientation device. 4,225,031, Cl. 198-395.000.
Frisbie, Larry D.: *See*—
Frisbie, Donald; Frisbie, Larry D.; and Olson, Joel J., 4,225,031, Cl. 198-395.000.
Frishberg, Mark D., to Eastman Kodak Company. Process for preparing 2-amino-5-formylthiazole and its hydrobromide salt. 4,225,719, Cl. 548-194.000.
Frisz, William H.: *See*—
Claus, Robert T.; and Frisz, William H., 4,225,471, Cl. 252-547.000.
Fritz, Walter: *See*—
Rothbuhr, Lothar; Sroka, Werner; and Fritz, Walter, 4,225,416, Cl. 208-23.000.
Frohlich, Walter: *See*—
Riedl, Josef; Frohlich, Walter; and Mittermaier, Erich, 4,225,520, Cl. 260-656.00R.
Frommherz, Egon, to Rotzler GmbH & Co. Spezialfabrik fur Seilwinden und Hebezeuge. Continuous winch. 4,225,119, Cl. 254-175.700.
Fuchs, Alfred: *See*—
Lothman, Stig A.; and Fuchs, Alfred, 4,225,556, Cl. 422-28.000.
Fuchs & Co. Aktiengesellschaft fur Elektro-Draht-Erzeugung und Maschinenbau: *See*—
Eustacchio, Claudio, 4,225,301, Cl. 425-88.000.
Fuerstlich Hohenzollernsche Huettenverwaltung, Lauchertal: *See*—
Eisenmann, Siegfried; and Hancke, Dieter, 4,224,859, Cl. 91-488.000.
Fuhr, Karl: *See*—
Schuster, Karl-Ernst; Rosenkranz, Hans J.; Rudolph, Hans; Fuhr, Karl; Zorn, Bruno; and Traubel, Harro, 4,225,695, Cl. 528-75.000.
Fuji Electric Co., Ltd.: *See*—
Tajima, Hiroyuki; and Arai, Tetsuo, 4,225,654, Cl. 429-34.000.
Fuji Photo Optical Co., Ltd.: *See*—
Numata, Saburo, 4,225,218, Cl. 354-23.00D.
Fujimi Kenmazai Kogyo Co. Ltd.: *See*—
Koshiyama, Isamu; and Senda, Tetsuji, 4,225,349, Cl. 106-3.000.
Fujimori, Naoji; Miyake, Masaya; Yamamoto, Takaharu; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Process for producing sintered hard metals and an apparatus therefor. 4,225,344, Cl. 75-203.000.
Fujisawa Pharmaceutical Company, Limited: *See*—
Kamiya, Takashi; and Takaya, Takao, 4,225,707, Cl. 544-16.000.
Fujita, Masayuki: *See*—
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,225,083, Cl. 239-132.300.
Fujitsu Limited: *See*—
Lai, Hung C., 4,225,849, Cl. 340-146.200.
Miwa, Hirohide; and Shiratori, Eiichi, 4,225,967, Cl. 455-68.000.
Spadea, Gregorio, 4,224,733, Cl. 29-571.000.
Fujiwara, Kiyoshi: *See*—
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; and Fujiwara, Kiyoshi, 4,225,079, Cl. 233-15.000.
Fukagai, Kouichi; Higashinaka, Kouichi; and Shirasaki, Kazuo, to Hitachi Metals, Ltd. Dustproof chute for particulate material loader. 4,225,033, Cl. 198-524.000.
Fukatsu, Shunzo: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.
Fukuda, Kenzo: *See*—
Kameyama, Tetsuya; Dokiya, Masayuki; and Fukuda, Kenzo, 4,225,733, Cl. 585-269.000.
Fukuda, Mamoru. Suturing apparatus. 4,224,947, Cl. 128-340.000.
Fukui, Hideaki: *See*—
Umemura, Sumio; Kitoh, Ryozo; Itoh, Shigeru; Arima, Yasutaka; Itoh, Kosuke; and Fukui, Hideaki, 4,225,462, Cl. 252-440.000.
Fukukita, Hiroshi: *See*—
Kawabuchi, Masami; Sato, Jun-ichi; Nagai, Kiyotaka; Fukukita, Hiroshi; and Fukumoto, Akira, 4,224,829, Cl. 73-626.000.
Fukumoto, Akira: *See*—
Kawabuchi, Masami; Sato, Jun-ichi; Nagai, Kiyotaka; Fukukita, Hiroshi; and Fukumoto, Akira, 4,224,829, Cl. 73-626.000.
Fukushima, Shuichi: *See*—
Hoshiyama, Satoshi; Fukushima, Shuichi; Kobayashi, Hiroshi; and Takamatsu, Hideki, 4,225,743, Cl. 585-512.000.

Fulukawa, Takumi; Hanzawa, Hisashi; and Shimizu, Kunio, to Sony Corporation. Mode change-over mechanism for recording and/or reproducing apparatus. 4,225,894, Cl. 360-137.000.

Funatsu, Shigehiro, to VLSI Technology Research Association. Device comprising circuits for holding, in particular, a test data signal. 4,225,958, Cl. 371-15.000.

Furihata, Hiroyuki, to Olympus Optical Co., Ltd. Endoscope with expansible cuff member and operation section. 4,224,929, Cl. 128-5.000.

Furukawa, Yoshiyasu: *See*—
Marumoto, Ryuji; Tanabe, Masao; and Furukawa, Yoshiyasu, 4,225,591, Cl. 424-180.000.

Furuya, Katusuke: *See*—
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,224,777, Cl. 53-641.000.
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,224,778, Cl. 53-64.000.

Gaeddert, Melvin V.; and Weigand, Rex O., to Hesston Corporation. Crop loading monitor for rotary balers. 4,224,867, Cl. 100-88.000.

Gaines, Donald R., to Gulf & Western Manufacturing Company. Tie rod ball joint construction. 4,225,260, Cl. 403-114.000.

Gaiteri, Frank, Jr.: *See*—
Tremblay, Maurice H.; Manning, Robert E.; Lanoue, Gerard; and Gaiteri, Frank, Jr., 4,225,442, Cl. 210-497.100.

Galasso, Francis S.; Fanti, Roy; and Veltri, Richard D., to United Technologies Corporation. Amorphous boron-carbon alloy in bulk form and methods of making the same. 4,225,355, Cl. 106-43.000.

Gallop, John C.; and Potts, Susan P., to National Research Development Corporation. Cryogenic nuclear gyroscope. 4,225,818, Cl. 324-302.000.

Gambro Dialysatoren GmbH & Co. KG: *See*—
Spranger, Kurt, 4,225,439, Cl. 210-321.00R.

Gammon, Charles T.: *See*—
Schmidt, William T.; and Gammon, Charles T., 4,225,456, Cl. 252-321.000.

Gane, Brian R., to British Petroleum Company Limited, The. Process for the production of acetaldehyde by the reaction of methanol with synthesis gas. 4,225,517, Cl. 568-487.000.

Gantz, Carroll M.; Pugh, Timothy G.; and Karasa, Alvydas P., to Black & Decker, Inc. Cordless vacuum cleaner storing and recharging system. 4,225,814, Cl. 320-2.000.

Gardini, Gian P.; Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, to Farmaceutici Geymonat Sud S.p.A. Process for preparing p-chlorophenoxy-acetyl-piperonylpiperazine hydrochloride. 4,225,714, Cl. 544-377.000.

Garrett Corporation, The: *See*—
Chapin, Donald W., 4,224,964, Cl. 137-821.000.

Garrison, Lilburn H., to Burroughs Corporation. Extrusion mold and method for growing monocrystalline structures. 4,225,378, Cl. 156-608.000.

Gartner, Johannes: *See*—
Rusch, Friedrich-Wilhelm; Gartner, Johannes; and Faist, Walter, 4,225,093, Cl. 241-76.000.

Gatley, John A., to Nuclear Power Company Limited. Liquid metal cooled past breeder nuclear reactors. 4,225,387, Cl. 176-18.000.

Gaubert, Jean: *See*—
Pierre, Bernard; Eyraud, Ivan; and Gaubert, Jean, 4,225,749, Cl. 174-107.000.

Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., to W. R. Grace & Co. N,N'Di(hydroxybenzyl) 1,3-propanediamine N,N'-diacetonitriles. 4,225,502, Cl. 260-465.00E.

Gault, Robert. Boat hulls. 4,225,551, Cl. 264-238.000.

Gauthier, Donald R., to ICI United States, Inc. Azo pyridone dyestuffs containing at least one reactive phosphoric or phosphonic acid group. 4,225,491, Cl. 260-156.000.

Gautier, Herve, to Thomson-CSF. Optical image acousto-electric reading device. 4,225,887, Cl. 358-213.000.

GAZ-Transport: *See*—
Jean, Pierre, 4,225,054, Cl. 220-436.000.

Gazda, Hans O. E. Method of separating gas mixtures particularly for the enrichment of a gas mixture in a component containing uranium 235. 4,225,324, Cl. 55-17.000.

Geelen, Evrard: *See*—
DeMaesschalck, Etienne; and Geelen, Evrard, 4,225,836, Cl. 335-153.000.

Gehrke, Glenn F., to General Motors Corporation. Venting arrangement for stroking universal joint. 4,224,808, Cl. 64-32.00F.

Gehrung, Manfred: *See*—
Henkler, Herbert; Gehrung, Manfred; and Rasek, Eduard, 4,225,098, Cl. 242-192.000.

Gell, Harold A. Interstitial hydrogen storage system. 4,225,320, Cl. 48-191.000.

Gell, Harold A. Orientation system. 4,225,867, Cl. 343-113.00R.

Gemmill, Robert M., Jr.: *See*—
Nipe, Richard N.; Schick, John W.; and Gemmill, Robert M., Jr., 4,225,739, Cl. 585-525.000.

General Atomic Company: *See*—
Thurston, Glenn C.; McDaniels, John D., Jr.; and Gertsch, Paul R., 4,224,983, Cl. 165-158.000.

General Battery Corporation: *See*—
Eberle, William J., 4,225,037, Cl. 198-861.000.

General Binding Corporation: *See*—
Holyoke, Robert H., 4,225,128, Cl. 270-68.00A.

General Electric Company: *See*—
Banucci, Eugene G.; and Olander, Walter K., 4,225,528, Cl. 260-429.00J.
Barkan, Philip; and Imam, Imdad, 4,225,761, Cl. 200-144.00B.
Barkan, Philip, 4,225,763, Cl. 200-144.00B.
Carlson, Harold G., 4,225,911, Cl. 363-50.000.
Carter, Robert A., 4,225,775, Cl. 219-375.000.
Crivello, James V., 4,225,691, Cl. 526-192.000.
Dabrowski, John E., 4,225,732, Cl. 568-794.000.
deTorres, Pablo D., 4,225,687, Cl. 525-423.000.
Haag, Donald L.; and Woods, Lee O., 4,225,210, Cl. 339-258.00R.
Keeney, Marvin F., 4,225,795, Cl. 307-232.000.
Knemeyer, Friedel S., 4,225,322, Cl. 51-295.000.
Kraus, Frederick L., 4,225,812, Cl. 318-349.000.
Ohno, John M., 4,225,546, Cl. 264-114.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,225,356, Cl. 106-73.500.
Reschovsky, John M.; and Whipple, Walter, III, 4,225,851, Cl. 340-177.0CA.
Zarchy, Andrew S.; and Kimura, Shiro G., 4,225,323, Cl. 55-11.000.

General Equipment & Mfg. Co., Inc.: *See*—
Fowler, Gerald L., 4,225,837, Cl. 335-181.000.

General Foods Company: *See*—
Pitchon, Esra, 4,225,630, Cl. 426-623.000.

General Motors Corporation: *See*—
Barnard, Michael L., 4,224,913, Cl. 123-440.000.
Barnett, Ronald R., 4,225,156, Cl. 280-804.000.
Bishai, Macram N., 4,225,799, Cl. 310-154.000.
Gehrke, Glenn F., 4,224,808, Cl. 64-32.00F.
Jeswani, Partab T.; and Ruflin, Gerard T., 4,224,823, Cl. 73-118.000.
O'Brien, Daniel J., 4,224,910, Cl. 123-440.000.
Roman, Michael J., Jr., 4,225,206, Cl. 339-91.00R.

General Signal Corporation: *See*—
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., 4,225,113, Cl. 251-306.000.
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., 4,225,114, Cl. 251-308.000.
Libke, Albert W., 4,225,112, Cl. 251-214.000.

Gentry, John M.: *See*—
Brandeau, Edward P.; and Gentry, John M., 4,225,207, Cl. 339-95.00R.
Brandeau, Edward P.; and Gentry, John M., 4,225,208, Cl. 339-95.00R.

Georges, Claude: *See*—
Meyr, Heinrich; and Georges, Claude, 4,225,962, Cl. 375-2.000.

Gerber Garment Technology, Inc.: *See*—
Gerber, Heinz J., 4,224,711, Cl. 15-89.000.

Gerber, Heinz J., to Gerber Garment Technology, Inc. Apparatus for cleaning bristled structures. 4,224,711, Cl. 15-89.000.

Gerk, Wilfried: *See*—
Eysel, Dieter; and Gerk, Wilfried, 4,224,846, Cl. 82-36.00R.

Gerow, Gordon P., to FMC Corporation. Separating citrus peel into albedo and flavedo components. 4,225,625, Cl. 426-482.000.

Gertsch, Paul R.: *See*—
Thurston, Glenn C.; McDaniels, John D., Jr.; and Gertsch, Paul R., 4,224,983, Cl. 165-158.000.

Gewerkschaft Schalker Eisenhutte: *See*—
Gregor, Karl; and Feldhaus, Karl, 4,225,393, Cl. 202-248.000.

Geyer, Charles J., Jr.; and White, Ben E., to Fiber Associates, Incorporated. Treatment of rayon staple. 4,224,866, Cl. 100-40.000.

Ghahramani, Iraj, to International Telephone and Telegraph Corporation. Flow detection system. 4,225,778, Cl. 235-92.0FL.

Gherardi, Gianluigi, to CIR S.p.A. - Divisione Sasib. Device for removing rod-like articles from a hopper. 4,225,032, Cl. 198-443.000.

Gibbs, Dale S.: *See*—
Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,225,406, Cl. 204-181.00C.
Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,225,407, Cl. 204-181.00C.

Gibson, Donald A. Pants suit pattern. 4,224,740, Cl. 33-17.00A.

Gibson, Joseph T.; and Duhon, Gerald L., to A. C. Co. Device for and method of sensing conditions in a well bore. 4,224,988, Cl. 166-250.000.

Gibson, Robert C.; and Korenko, Michael K., to United States of America, Energy. High strength nickel-chromium-iron austenitic alloy. 4,225,364, Cl. 148-31.000.

Giddings & Lewis, Inc.: *See*—
Beadle, Bruce R.; Conners, John P.; and Larson, Michael E., 4,225,918, Cl. 364-200.000.

Giddings, Robert A.: *See*—
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,225,356, Cl. 106-73.500.

Gilbert, Wesley B.: *See*—
Bouwkamp, Gerald R.; Davis, Charles W.; Gilbert, Wesley B.; and Donahue, Charles J., 4,225,291, Cl. 417-214.000.

Gillenkirch, Gerd. Bagging machine with two weighing scales and two reversible conveyors. 4,225,001, Cl. 177-90.000.

Gillis, Robert E. Collapsible chair. 4,225,180, Cl. 297-258.000.

Gilmore, Jack A.: *See*—
Moriyasu, Hiro; Gilmore, Jack A.; Velsink, Willem B.; and Havarro, Luis J., 4,225,940, Cl. 364-900.000.

Girling Limited: *See*—
Dufft, Jurgen, 4,225,192, Cl. 303-24.00A.
Op den Camp, Lutz E. A., 4,225,017, Cl. 188-73.300.

Giusti, Giampiero. Detecting device for breaks or tears and for the end of the strip in a strip of any material during its advance. 4,224,824, Cl. 73-159.000.

Givaudan Corporation: *See—*
Kaiser, Roman, 4,225,501, Cl. 260-346.220.
Gleason, Kenneth R. Music holder for drum. 4,225,107, Cl. 248-443.000.
Gliniorz, Lothar: *See—*
Schoettle, Klaus; Lewin, Helmut; Hoffmann, Werner; Dobler, Peter; and Gliniorz, Lothar, 4,225,099, Cl. 242-192.000.
Glover, Sidney: *See—*
Morton, Reginald F.; and Glover, Sidney, 4,225,058, Cl. 222-81.000.
Godare, William L.: *See—*
Diehl, Robert J.; and Godare, William L., 4,225,325, Cl. 55-191.000.
Gohde, Wolfgang. Apparatus for measuring cytological properties. 4,225,229, Cl. 356-39.000.
Goldstein, Jonathan R.: *See—*
Klein, Yitzhak; Goldstein, Jonathan R.; Valentina, Perach; and Kobliakov, Esther, 4,225,657, Cl. 429-248.000.
Golovko, Vladimir N.: *See—*
Pokhodnya, Igor K.; Ananin, Vladimir P.; Golovko, Vladimir N.; and Denisov, Sergei I., 4,225,773, Cl. 219-146.300.
Goodman, David M. Energy-efficient beam-index displays with programmable power supplies. 4,225,880, Cl. 358-66.000.
Goodrode, Melvin H. Energy saving inner door device for a refrigeration appliance. 4,225,203, Cl. 312-236.000.
Goof, Sven K. L. Apparatus for removing material coatings from interior surfaces of containers. 4,225,803, Cl. 310-323.000.
Goos, Raymond: *See—*
Bekaert, Johan; and Goos, Raymond, 4,225,804, Cl. 313-412.000.
Gordon, Marvin, to Whitman Medical Corporation. Stabilizing fitting for an intravenous catheter. 4,224,937, Cl. 128-133.000.
Gordon, Robert L.: *See—*
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,225,053, Cl. 220-416.000.
Goring, Joachim E.; and Ochlich, Peter P., to Wulfing, Johann A. Pharmaceutical composition containing an xanthine derivative. 4,225,607, Cl. 424-253.000.
Goto, Kenji: *See—*
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.
Gotz, Heinz: *See—*
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Gould Inc.: *See—*
Jacobs, Philip C., Jr., 4,225,840, Cl. 337-273.000.
Grabowski, Werner. Outside rear vision mirror. 4,225,212, Cl. 350-62.000.
Grady, Thomas J.: *See—*
Waters, Ronald L.; Grady, Thomas J.; Brown, Thomas F.; and Long, E. Shirley, 4,225,852, Cl. 340-286.00R.
Graham, Paul R.; and Riggs, Olen L., Jr., to Kerr-McGee Corporation. Vanadium and uranium oxidation by controlled potential electrolysis. 4,225,396, Cl. 204-1.500.
Grammont, Paul D. A.: *See—*
Boutier, Jacques L.; Grammont, Paul D. A.; and Herbin, Jean E. E., 4,225,677, Cl. 521-31.000.
Granig, Hubert. Cushioning means for motor vehicles. 4,225,168, Cl. 293-134.000.
Granryd, Thorvald G. Combination winch and traction intensifier for rubber tired vehicles. 4,224,972, Cl. 152-213.00A.
Granryd, Thorvald G. Low cost vehicle traction device employing pivotally mounted anchoring means. 4,225,082, Cl. 238-14.000.
Grantham, Gary D., to Du Pont de Nemours, E. I., and Company. Insecticidal and nematicidal carbamates. 4,225,615, Cl. 424-298.000.
Grants, Paul R. Room humidifier and the humidification system. 4,225,539, Cl. 261-99.000.
Gras, Roger: *See—*
Barraud, Andre; Gras, Roger; and Vandevyver, Michel, 4,224,896, Cl. 118-402.000.
Grau, Heinz: *See—*
Weber, Jurgen; and Grau, Heinz, 4,225,515, Cl. 568-444.000.
Grau, Thomas G.; and Tompsett, David E., to Bell Telephone Laboratories, Incorporated. Circuit board contact contamination probe. 4,225,819, Cl. 324-415.000.
Gray, Stanley, to Mechanical Technology Incorporated. Hydrodynamic compliant thrust bearing. 4,225,196. Cl. 308-9.000.
Green, James T.: *See—*
Rayner, Adrien P.; Messenger, John D.; and Green, James T., 4,225,045, Cl. 206-508.000.
Gregor, Karl; and Feldhaus, Karl, to Gewerkschaft Schalker Eisenhutte. Door-removal device. 4,225,393, Cl. 202-248.000.
Greiner, Leonard. Chemical heat pump. 4,224,803, Cl. 62-106.000.
Gremillon, Marc: *See—*
Cosyns, Jean; and Gremillon, Marc, 4,225,461, Cl. 252-439.000.
Grennard, Alf H. Process for safe underground storage of materials and apparatus for storage of such materials. 4,224,800, Cl. 62-45.000.
Greskovich, Charles D.: *See—*
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., 4,225,356, Cl. 106-73.500.
Griehl, Wolfgang: *See—*
Schmid, Eduard; and Griehl, Wolfgang, 4,225,699, Cl. 528-324.000.
Griffith, Donald L.; and Dunham, Lawrence A., to International Telephone and Telegraph Corporation. Pressure actuated unit with high temperature protection. 4,225,760, Cl. 200-83.00R.
Grigg, Geoffrey W.; and Sasse, Wolfgang H. F., to Commonwealth Scientific & Industrial Research Organization. Antibiotic mixtures. 4,225,588, Cl. 424-177.000.
Grigger, John C.: *See—*
Ferren, Richard A.; Dimmig, Daniel A.; and Grigger, John C., 4,225,482, Cl. 260-29.60F.
Grimm, Harald, deceased: *See—*
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.
Grimm, Ingrid A., heiress: *See—*
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.
Grob, Ferdinand: *See—*
Rabus, Friedrich; and Grob, Ferdinand, 4,224,842, Cl. 74-866.000.
Grosclaude, Gerard; Regnier, Jean; and Cavarroc, Marcel, to Institut National de la Recherche Agronomique. Process and apparatus for the continuous manufacture of cheese. 4,224,865, Cl. 99-453.000.
Gross, Udo: *See—*
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.
Grubman, Alan A., to Continental Group, Inc., The. Magnetic can separator. 4,225,047, Cl. 209-544.000.
Grundei, Hans; Henssge, Joachim; and Schutt, Gerhard, to Schutt & Grundei GmbH. Endoprosthetic elbow joints. 4,224,695, Cl. 3-1.910.
Grune, Horst, to Siemens Aktiengesellschaft. Support frame for electrolyte chambers in electrochemical cells. 4,225,411, Cl. 204-286.000.
Gruppo Lepetit S.p.A.: *See—*
Romelli, Pier B.; and Pennisi, Francesco, 4,225,574, Cl. 424-1.000.
Gsell, Laurenz: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,225,616, Cl. 424-305.000.
GTE Products Corporation: *See—*
Fredrickson, Paul B., 4,225,797, Cl. 307-278.000.
Smithgall, Harry E.; and Speigel, Kenneth, 4,225,805, Cl. 313-481.000.
GTE Sylvania Incorporated: *See—*
Fahey, Robert J., 4,225,792, Cl. 307-66.000.
GTE Sylvania N.V.: *See—*
Bekaert, Johan; and Goos, Raymond, 4,225,804, Cl. 313-412.000.
Guarino, Giovanni; and Praitoni, Alberto, to Centro Sperimentale Metallurgico S.p.A. Addition agent for molten metals. 4,225,343, Cl. 75-130.00R.
Guedet, Robert, to SCAL Societe de Conditionnements en Aluminium. Method for fabrication of coated metal packages by thermoforming. 4,224,779, Cl. 53-426.000.
Guerbet S.A.: *See—*
Tilly, Guy; Hardouin, M. Jean-Charles; and Lautrou, Jean, 4,225,577, Cl. 424-5.000.
Guimond, Roy A.: *See—*
Gulliksen, John E.; and Guimond, Roy A., 4,225,906, Cl. 362-254.000.
Gulf Canada Resources Inc.: *See—*
Trevoy, Lloyd; and Maskwa, Alvin, 4,225,422, Cl. 209-2.000.
Gulf Oil Canada Limited: *See—*
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.
Gulf Oil Corporation: *See—*
Karim, Khalid A.; and Rea, James H., 4,225,550, Cl. 264-236.000.
Gulf & Western Manufacturing Company: *See—*
Gaines, Donald R., 4,225,260, Cl. 403-114.000.
Gulliksen, John E.; and Guimond, Roy A., to Koehler Manufacturing Company. Luminaire apparatus with multiple light sources and methods of operating same. 4,225,906, Cl. 362-254.000.
Gunjima, Tomoki; and Takeshita, Isamu, to Asahi Glass Company, Limited. Method of bonding cation exchange membrane of fluorinated polymer. 4,225,400, Cl. 204-98.000.
Gunner, William: *See—*
Archambault, Larry J., 4,225,132, Cl. 272-137.000.
Gutsfeld, Anton F. Stream-powered turbine vanes. 4,224,793, Cl. 60-398.000.
Gygli Technik AG: *See—*
Bachtiger, Hans, 4,225,377, Cl. 156-314.000.
H. Putsch GmbH & Company: *See—*
Bittner, Hans-Joachim; Scherer, Heribert; and Hanses, Hans, 4,225,331, Cl. 65-48.000.
Haag, Donald L.; and Woods, Lee O., to General Electric Company. Terminal and method of making. 4,225,210, Cl. 339-258.00R.
Haas, Jorg, to Bruker-Physik AG. Hot-water supply for submarines and the like. 4,224,804, Cl. 62-238.000.
Haas, Paul A., to United States of America, Energy. Process for decomposing nitrates in aqueous solution. 4,225,455, Cl. 252-301.10R.
Haibara, Konomi: *See—*
Imada, Akira; Kintaka, Kazuhiko; and Haibara, Konomi, 4,225,586, Cl. 424-117.000.
Halasa, Adel F.; and Hall, James E., to Firestone Tire & Rubber Company, The. Solution polymerization of chlorophosphazene with sulfur modifier. 4,225,567, Cl. 423-300.000.
Halasa, Adel F.; and Hall, James E., to Firestone Tire & Rubber Company, The. Process and catalyst for producing high trans 1,4-polybutadiene. 4,225,690, Cl. 526-183.000.
Halasa, Adel F.: *See—*
Hergenrother, William L.; and Halasa, Adel F., 4,225,697, Cl. 528-168.000.

Haldemann, Hugo. Device for indicating a symbol representing the location of a parking place. 4,224,894, Cl. 116-209.000.

Hall, Clifford T. M.: *See—*
Howard, Roy S.; Hodgson, Donald; Dale, James G.; and Hall, Clifford T. M., 4,225,389, Cl. 176-40.000.

Hall, James E.: *See—*
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Halasa, Adel F.; and Hall, James E., 4,225,690, Cl. 526-183.000.

Hall, Leo M. Method for producing maltooligosaccharide glycosides. 4,225,672, Cl. 435-74.000.

Hall, Lewis W., Jr.; Tice, John D.; Myers, Harry K., Jr.; and Schneider, Abraham, to Suntech, Inc. Isomerization of the hydrogenated norbornadiene endo-endo hexacyclic dimer. 4,225,735, Cl. 585-360.000.

Halldorson, Jacob T.; and Bureaud, Rene. Slurrying apparatus including grinding and separating means. 4,225,094, Cl. 241-79.000.

Hallerback, Stig L.; and Lachonius, Leif, to Aktiebolaget SKF. Liquid cooled pump motor unit. 4,225,292, Cl. 417-367.000.

Hama, Kazuaki: *See—*
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,225,673, Cl. 435-101.000.

Hamacher, Hubert W. Cash and check register. 4,225,157, Cl. 282-23.00R.

Hamalcik, Jaroslav: *See—*
Rysanek, Duson; Kotrc, Bohumir; Hamalcik, Jaroslav; and Olejnik, Peter, 4,225,820, Cl. 1324-450.000.

Hamilton, Southall W.: *See—*
Hamilton, William J., 4,225,853, Cl. 340-328.000.

Hamilton, William J., to Hamilton, Southall W. Controller for signalling system. 4,225,853, Cl. 340-328.000.

Hammann, Ingeborg: *See—*
Maurer, Fritz; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,225,594, Cl. 424-200.000.

Hammer, Clarence F.; and Sinclair, Harold K., to Du Pont de Nemours, E. I., and Company. Adhesive blend of wood rosin and thermoplastic graft copolymer. 4,225,476, Cl. 260-27.00R.

Hammerli, Martin: *See—*
LeRoy, Rodney L.; Hammerli, Martin; and Butler, John P., 4,225,402, Cl. 204-129.000.

Hammerschlag, Peter G., to Easy Up Shelving, Inc. Mezzanine support beam for multi-story hook-in type shelving. 4,224,776, Cl. 52-645.000.

Hammonds, James C.: *See—*
Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., 4,225,276, Cl. 410-64.000.

Hammons, Burrell E., to United States of America, Energy. Solar tracking apparatus. 4,225,781, Cl. 250-203.00R.

Hampton, Clifton G.: *See—*
Headen, James J.; Abbott, Warren D., Jr.; and Hampton, Clifton G., 4,225,085, Cl. 239-317.000.

Hampton, Marshall D. Padlock cover and shackle seal therefor. 4,224,813, Cl. 70-51.000.

Hanagan, Michael W.; and Schoeck, Donald I., to Corbin-Gentry, Inc. Motorcycle seat with pivotable armrests for the passenger. 4,225,183, Cl. 297-417.000.

Hancke, Dieter: *See—*
Eisenmann, Siegfried; and Hancke, Dieter, 4,224,859, Cl. 91-488.000.

Handte, Dietmar: *See—*
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.

Hanisch, Wolfgang: *See—*
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.

Hann, Paul D.: *See—*
Chapman, Charles C.; and Hann, Paul D., 4,225,740, Cl. 585-719.000.
Chapman, Charles C.; and Hann, Paul D., 4,225,741, Cl. 585-719.000.

Hannah, Martin J., to Advanced Thermal Systems, Inc. Guided expansion joint. 4,225,143, Cl. 277-11.000.

Hans Schworer KG: *See—*
Schworer, Hans, 4,224,773, Cl. 52-315.000.

Hansen, Lee A.; and Conrad, William A. Attachment for line trimmer. 4,224,784, Cl. 56-16.900.

Hanses, Hans: *See—*
Bittner, Hans-Joachim; Scherer, Heribert; and Hanses, Hans, 4,225,331, Cl. 65-48.000.

Hansson, Anders E., to Aktiebolaget Draco. Method of treatment for mucocutaneous herpes simplex infections. 4,225,614, Cl. 424-289.000.

Hanzawa, Hisashi: *See—*
Fulukawa, Takumi; Hanzawa, Hisashi; and Shimizu, Kunio, 4,225,894, Cl. 360-137.000.

Happel, Robert, to Daimler-Benz Aktiengesellschaft. Combustion engine with internal combustion. 4,224,906, Cl. 123-90.150.

Hara, Akio: *See—*
Fujimori, Naoji; Miyake, Masaya; Yamamoto, Takaharu; and Hara, Akio, 4,225,344, Cl. 75-203.000.

Harada, Masahide: *See—*
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,225,648, Cl. 428-336.000.

Harada, Seiki: *See—*
Makino, Daisuke; Miyadera, Yasuo; Harada, Seiki; and Saiki, Atsushi, 4,225,702, Cl. 528-353.000.

Harase, Jirou; Nakashima, Shozaburo; and Mori, Yasukazu, to Nippon Steel Corporation. Process for producing grain oriented electrical silicon steel sheet containing aluminium. 4,225,366, Cl. 148-111.000.

Hardouin, M. Jean-Charles: *See—*
Tilly, Guy; Hardouin, M. Jean-Charles; and Lautrou, Jean, 4,225,577, Cl. 424-5.000.

Harper, Bruce M.: *See—*
Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., 4,225,626, Cl. 426-520.000.

Harper, Ernest A., deceased: *See—*
Bailey, Dunn M.; and Harper, Ernest A., deceased, 4,225,329, Cl. 62-24.000.

Harper, Patrick D.: *See—*
Weber, Robert E.; and Harper, Patrick D., 4,225,898, Cl. 361-154.000.

Harris Corporation: *See—*
Davis, John F., Jr., 4,225,827, Cl. 330-296.000.
Hershberger, David L., 4,225,751, Cl. 179-1.0GS.
Mazur, John T., 4,225,868, Cl. 343-765.000.
Neale, Ronald G.; and Wood, Grady M., 4,225,946, Cl. 365-163.000.
Osborne, William P.; Hartman, William F.; and Crabtree, Luther L., 4,225,976, Cl. 455-226.000.

Harris-Hub Co., Inc.: *See—*
Nowell, Richard A., 4,224,704, Cl. 5-181.000.

Harris Preble Company: *See—*
Jecmen, James M., deceased; and Jecmen, John J., 4,224,767, Cl. 49-488.000.

Harris, Robert H.; and Lamica, John S., to Taulman Company, The. Sintered-glass-granule filter medium. 4,225,443, Cl. 210-510.000.

Harrison, Earnest R.; and Johnston, Roy C., to Texas Instruments Incorporated. Internal air release control apparatus air gun. 4,225,009, Cl. 181-120.000.

Hars, Christoph; Schirrich, Klaus; Steinmeier, Bodo; and Tappe, Wilfried, to Fischer & Krecke. Means for displacing elements between upright machine frames. 4,224,871, Cl. 101-248.000.

Hart, James E., to American Standard Inc. Control valve arrangement for combined brake cylinder and reservoir. 4,225,193, Cl. 303-35.000.

Hart, Jim. Pipe cutter with easily detachable handle. 4,224,737, Cl. 30-99.000.

Hartco Company: *See—*
Lingle, Harrison C., 4,224,731, Cl. 29-432.000.

Hartl, Roland; Helm, Dieter; and Kraemer, Dieter, to Rohm GmbH. Packaged diagnostic test strip. 4,225,557, Cl. 422-56.000.

Hartley, Henry F.; Lemay, Richard A.; Terakawa, Kiyoshi H.; and Woods, William E., to Honeywell Information Systems Inc. Transfer control technique between two units included in a data processing system. 4,225,921, Cl. 364-200.000.

Hartman, William F.: *See—*
Osborne, William P.; Hartman, William F.; and Crabtree, Luther L., 4,225,976, Cl. 455-226.000.

Hartmann, Willy: *See—*
Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, 4,225,704, Cl. 542-441.000.

Hartwig, Claus: *See—*
Timm, Thies; and Hartwig, Claus, 4,225,683, Cl. 525-126.000.

Haruki, Hiroshi: *See—*
Watanabe, Masahiro; and Haruki, Hiroshi, 4,225,828, Cl. 331-1.00A.

Harwell, Earnest W. Method for charging small particles of iron or steel directly into molten metal in an arc furnace. 4,225,745, Cl. 13-33.000.

Harwell, Max L.: *See—*
Van Atta, Peter W.; and Harwell, Max L., 4,225,883, Cl. 358-113.000.

Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, to Ricoh Company, Ltd. Electrophotographic light-sensitive member. 4,225,648, Cl. 428-336.000.

Hasegawa, Michio: *See—*
Inomata, Koichiro; Shimanuki, Senji; and Hasegawa, Michio, 4,225,339, Cl. 75-122.000.

Hasegawa, Mutsuo; Hirono, Hatsuo; Nagata, Katsuyuki; Hayashi, Shinji; and Yamagata, Hiroshi, to Yoshida Kogyo K.K. Method of improving the corrosion resistance of an anodically oxidized surface film on aluminum articles. 4,225,398, Cl. 204-33.000.

Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mitsuo, to International Resources Company, Ltd. Process and apparatus for continuous leaching of ores. 4,225,563, Cl. 423-20.000.

Hasler AG Bern: *See—*
Meyr, Heinrich; and Georges, Claude, 4,225,962, Cl. 375-2.000.

Hasson, Harrith M. Gynecological instrument. 4,224,951, Cl. 128-778.000.

Hatanaka, Takayoshi; Yakushiji, Tsuguharu; and Tanaka, Kanji, to Sharp Kabushiki Kaisha. Microwave oven having uneven bottom wall oven cavity. 4,225,767, Cl. 219-10.55F.

Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic ignition control method and apparatus. 4,225,925, Cl. 364-431.000.

Hattori, Toshihiko: *See—*
Kakuwa, Seiichi; Hattori, Toshihiko; Yamagata, Ichiro; and Yamada, Toshio, 4,225,294, Cl. 418-142.000.

Haupt, Fritz, to Maag Gear Wheel & Machine Company. Gear pump with transmission gearwheel adjustment. 4,225,296, Cl. 418-206.000.

Hausberg, Hans-Heinrich: *See*—
Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.

Hauser, Karl: *See*—
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.

Hauserman Limited: *See*—
Ball, Douglas C.; and Walker, Marshall, 4,224,769, Cl. 52-36.000.

Havarro, Luis J.: *See*—
Moriyasu, Hiro; Gilmore, Jack A.; Velsink, Willem B.; and Havarro, Luis J., 4,225,940, Cl. 364-900.000.

Hay, Robert A., II; and DeBliek, John A., to Dow Chemical Company, The. Electromagnet tool for retrieving magnetic objects from an earth cavern. 4,225,171, Cl. 294-65.500.

Hayashi, Chihiro: *See*—
Matsuda, Tsutomu; Rimoto, Masanori; and Hayashi, Chihiro, 4,225,662, Cl. 430-173.000.

Hayashi, Hideyuki: *See*—
Kawamura, Koji; and Hayashi, Hideyuki, 4,225,021, Cl. 188-73.500.

Hayashi, Shinji: *See*—
Hasegawa, Mutsuo; Hirono, Hatsuo; Nagata, Katsuyuki; Hayashi, Shinji; and Yamagata, Hiroshi, 4,225,398, Cl. 204-33.000.

Hayashi, Yoshimasa; and Nagumo, Shin-ichi, to Nissan Motor Company, Limited. Internal combustion engine equipped with an improved air injection system. 4,224,792, Cl. 60-305.000.

Hazard, Herbert R.; and Recchi, Vincenzo, to Fascione, Pietro. Combustion head for a combustion chamber. 4,225,305, Cl. 431-182.000.

Headen, James J.; Abbott, Warren D., Jr.; and Hampton, Clifton G., to Headen, James J.; and Abbott, Warren D., Jr. Shower head dispenser. 4,225,085, Cl. 239-317.000.

Hebky, Jaromir; Lupinek, Vladimir; Sova, Milan; Sevcik, Bohumil; and Broz, Jiri, to SPOFA, spojene podniky prop farmaceutickou vyrobu. 2-Formylquinoxaline-1,4-dioxide cyanoacetylhydrazone and methods for preparation thereof. 4,225,604, Cl. 424-250.000.

Hebner, Lawrence C. Polyhedronal game apparatus. 4,225,137, Cl. 273-241.000.

Heckelsberg, Robert E., to AMCA International Corporation. Building panel. 4,224,775, Cl. 52-528.000.

Heed, Bjorn: *See*—
Lunden, Arnold; Heed, Bjorn; and Kvist, Arnold J. L., 4,225,656, Cl. 429-191.000.

Heffernan, James T.: *See*—
Kinzler, Jack A.; Heffernan, James T.; Fehrenkamp, Leroy G.; and Lee, William S., 4,225,372, Cl. 156-154.000.

Hefren, Fred W. Snubber assembly for motor homes. 4,225,123, Cl. 267-28.000.

Hegar, Gert; and Riat, Henri, to Ciba-Geigy, AG. Production of 2,4-difluoro-6-amino-s-triazine. 4,225,709, Cl. 544-194.000.

Heiberger, Philip, to Du Pont de Nemours, E. I., and Company. Alkydmonomer high-solids coating process. 4,225,473, Cl. 260-22.0CB.

Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, to Kloeckner Werke AG. Tensioning device for simultaneously tensioning a plurality of bolts. 4,224,843, Cl. 81-57.380.

Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, to Bayer Aktiengesellschaft. Preparation of halogenovinyl-substituted tetrahydrofuran-2-ones. 4,225,704, Cl. 542-441.000.

Heiney, Elmer T., III: *See*—
Achari, Achyuta; and Heiney, Elmer T., III, 4,225,559, Cl. 422-98.000.

Heinrich, Ernst: *See*—
Buhler, Ulrich; and Heinrich, Ernst, 4,225,716, Cl. 546-286.000.

Heitz, Pierre: *See*—
Bosser, Stephane; and Heitz, Pierre, 4,224,968, Cl. 141-284.000.

Helliker, Conrad D.; and O'Sullivan, Thomas D., to Bell Telephone Laboratories, Incorporated. Process for fabricating porous nickel bodies. 4,225,346, Cl. 75-211.000.

Helm, Dieter: *See*—
Hartl, Roland; Helm, Dieter; and Kraemer, Dieter, 4,225,557, Cl. 422-56.000.

Henderson, Norman J. Apparatus for removing warps or surface irregularities from polyvinyl phonograph records. 4,225,298, Cl. 425-11.000.

Henke, Hermann: *See*—
Munk, Edmund; and Henke, Hermann, 4,225,545, Cl. 264-72.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Hiller, Gunter, 4,225,584, Cl. 424-94.000.

Henkler, Herbert; Gehrung, Manfred; and Rasek, Eduard, to BASF Aktiengesellschaft. Tape transport apparatus. 4,225,098, Cl. 242-192.000.

Hennessy, Michael P.; Prueher, Andrew B.; and Wagner, Paul E. Jaw-type refuse collecting device. 4,225,174, Cl. 294-113.000.

Henrick, Clive A., to Zoecon Corporation. Fluorobenzyl esters of cyclopropanecarboxylic acids. 4,225,533, Cl. 260-465.00D.

Henriksen, Ronald W. Ratchet bolt drive apparatus incorporating bidirectionally operable reciprocating drive means. 4,224,844, Cl. 81-57.460.

Hensley, Albert L., Jr.; and Quick, Leonard M., to Standard Oil Company (Indiana). Process for hydrotreating heavy hydrocarbons. 4,225,421, Cl. 208-216.0PP.

Henssge, Joachim: *See*—
Grundei, Hans; Henssge, Joachim; and Schutt, Gerhard, 4,224,695, Cl. 3-1.910.

Henzi, Beat: *See*—
Entschel, Roland; and Henzi, Beat, 4,225,490, Cl. 260-156.000.

Hepworth, Edward C.; and Means, Rodney J., to Motorola, Inc. Error driven interrupt for polled MPU systems. 4,225,917, Cl. 364-200.000.

Hepworth, Edward C.: *See*—
Kyu, Shikun; and Hepworth, Edward C., 4,225,919, Cl. 364-200.000.

Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity: *See*—
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.
Trevoy, Lloyd; and Maskwa, Alvin, 4,225,422, Cl. 209-2.000.

Herbin, Jean E. E.: *See*—
Boutier, Jacques L.; Grammont, Paul D. A.; and Herbin, Jean E. E., 4,225,677, Cl. 521-31.000.

Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing dialkyl alkylene diamino substituents. 4,225,697, Cl. 528-168.000.

Hermans, Hubert K. F.: *See*—
Sanczuk, Stefan; and Hermans, Hubert K. F., 4,225,606, Cl. 424-251.000.

Herrnring, Gunther: *See*—
Rosler, Jurgen; and Herrnring, Gunther, 4,225,256, Cl. 401-209.000.

Hershberger, David L., to Harris Corporation. Variable-angle, multiple channel amplitude modulation system. 4,225,751, Cl. 179-1.0GS.

Hespe, Hans: *See*—
Medem, Harald; Freitag, Dieter; Hespe, Hans; and Heynemann, Carl, 4,225,698, Cl. 528-176.000.

Hess, Laurie F. Method of repelling insects by systemic action in humans on sulfur and sulfur containing substances. 4,225,587, Cl. 424-162.000.

Hesston Corporation: *See*—
Gaeddert, Melvin V.; and Weigand, Rex O., 4,224,867, Cl. 100-88.000.

Hetmann, Richard: *See*—
Colell, Hans; and Hetmann, Richard, 4,225,008, Cl. 180-287.000.

Hewlett-Packard Company: *See*—
Tiefert, Karl H.; and Curby, Rockford C., 4,224,734, Cl. 29-583.000.

Hexcel Corporation: *See*—
Murray, Ian; and Kampner, Stanley, 4,224,696, Cl. 3-1.911.
Murray, Ian; and Kampner, Stanley, 4,224,697, Cl. 3-1.911.

Heynemann, Carl: *See*—
Medem, Harald; Freitag, Dieter; Hespe, Hans; and Heynemann, Carl, 4,225,698, Cl. 528-176.000.

Hi-Tech Industries, Inc.: *See*—
Kaplan, Neil, 4,225,554, Cl. 264-328.200.

Hickory Springs Manufacturing Company: *See*—
Hooker, Richard B.; and Bishop, Thomas R., 4,225,265, Cl. 403-353.000.

Hicks, Darrell D., to Celanese Corporation. Cationic polyepoxide resinous composition modified by a mixture of amines. 4,225,478, Cl. 260-29.2TN.

Hicks, Darrell D., to Celanese Corporation. Cationic epoxide-amine reaction products. 4,225,479, Cl. 260-29.2TN.

Hicks, Harry H., to Industrial Air, Inc. Pneumatic cleaning of the chamber carding elements of a textile machine. 4,224,718, Cl. 19-107.000.

Hiereth, Hermann: *See*—
Binder, Klaus; Charzinski, Peter; Hiereth, Hermann; and Polz, Harald, 4,224,902, Cl. 123-280.000.

Higashide, Eiji; Asai, Mitsuko; and Tanida, Seiichi, to Takeda Chemical Industries, Ltd. Maytansinol esters. 4,225,494, Cl. 260-239.30P.

Higashinaka, Kouichi: *See*—
Fukagai, Kouichi; Higashinaka, Kouichi; and Shirasaki, Kazuo, 4,225,033, Cl. 198-524.000.

High Pressure Technology, Inc.: *See*—
Latter, Richard, 4,225,300, Cl. 425-77.000.

Hilal, Said S., to American Underwater Products. Balanced second stage for a two stage demand regulator. 4,224,938, Cl. 128-204.260.

Hildebrand, Daniel H.: *See*—
Roushdy, Hesham A.; and Hildebrand, Daniel H., 4,224,838, Cl. 74-688.000.

Hildreth, William G. Clotheslines. 4,225,048, Cl. 211-1.300.

Hilfman, Lee, to UOP Inc. Hydroprocessing of hydrocarbons. 4,225,418, Cl. 208-111.000.

Hill, John S.: *See*—
Buettner, Carl F.; and Hill, John S., 4,225,167, Cl. 293-120.000.

Hiller, Gunter, to Henkel Kommanditgesellschaft auf Aktien. Animal feeds containing a mixture of nitrovin, carbadox or olaquindox and proteolytic enzymes. 4,225,584, Cl. 424-94.000.

Hills, Richard E.; and Neely, Derek K., to Pittsburgh-Des Moines Steel Company. Insulation for double wall tanks. 4,225,055, Cl. 220-452.000.

Himes, James F.: *See*—
Mikulicz, Michael Z.; and Himes, James F., 4,225,737, Cl. 585-449.000.

Hindle, Durward J., to International Telephone and Telegraph Corporation. Safety clamp device and apparatus utilizing same. 4,225,012, Cl. 182-112.000.

Hirakawa, Tadashi, to Teijin Limited. Raised and fused fabric filter and process for producing the same. 4,225,642, Cl. 428-91.000.

Hirano, Reiji; Mochizuki, Koichi; Yasui, Tokio; and Shimazu, Jyoji, to Canon Kabushiki Kaisha. Instructional calculator. 4,225,932, Cl. 364-710.000.

Hirano, Yoshio: *See—*
Makino, Tomoatsu; Hirano, Yoshio; and Miwa, Katsuteru, 4,225,796, Cl. 307-261.000.

Hirata, Akio; and Saito, Suzuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Frequency converters. 4,225,914, Cl. 363-160.000.

Hirokawa, Norio: *See—*
Yoshimura, Ryoichi; Honda, Munetaka; and Hirokawa, Norio, 4,225,348, Cl. 75-257.000.

Hirono, Hatsuo: *See—*
Hasegawa, Mutsuo; Hirono, Hatsuo; Nagata, Katsuyuki; Hayashi, Shinji; and Yamagata, Hiroshi, 4,225,398, Cl. 204-33.000.

Hirose, Yoshiteru: *See—*
Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, 4,225,585, Cl. 424-114.000.

Hirota, Kazumi; and Matsuoka, Kikuo, to Toyo Seikan Kaisha, Limited. Method of manufacturing low-rigid, wrinkle-free articles. 4,225,553, Cl. 264-292.000.

Hitachi Chemical Company, Ltd.: *See—*
Makino, Daisuke; Miyadera, Yasuo; Harada, Seiki; and Saiki, Atsushi, 4,225,702, Cl. 528-353.000.

Hitachi, Ltd.: *See—*
Nakazawa, Terumi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; Nagae, Hiromitsu; and Inui, Tomoji, 4,224,917, Cl. 123-647.000.
Takamaru, Takeshi; Kashiwaya, Mineo; Morita, Kiyomi; and Oobayashi, Seijl, 4,225,535, Cl. 261-34.00B.
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; and Fujiwara, Kiyoshi, 4,225,079, Cl. 233-15.000.

Hitachi Metals, Ltd.: *See—*
Fukagai, Kouichi; Higashinaka, Kouichi; and Shirasaki, Kazuo, 4,225,033, Cl. 198-524.000.

Hjertman, Bengt N. V. Device for closing or interrupting an electric alternating current arising on a line. 4,225,895, Cl. 361-8.000.

Ho, Roland K., to Motorola, Inc. Fabrication of capacitive transducers. 4,225,632, Cl. 427-79.000.

Hobo, Nobuhito: *See—*
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.

Hoch, John J., to Deere & Company. Combined axle, bumper and safety guard for walk-behind mower. 4,224,785, Cl. 56-17.400.

Hock, Franz: *See—*
Morgner, Friedrich W.; Hock, Franz; and Stock, Hans G., 4,224,720, Cl. 19-204.000.

Hodge, Malcolm H.; Lumpp, Robert E.; and Margolin, Mark, to TRW Inc. Connector construction. 4,225,214, Cl. 350-96.210.

Hodgson, Donald: *See—*
Howard, Roy S.; Hodgson, Donald; Dale, James G.; and Hall, Clifford T. M., 4,225,389, Cl. 176-40.000.

Hodson, Harry. Mixing and agitating device. 4,225,247, Cl. 366-40.000.

Hodson, Harry. Method of producing and distributing a pervious concrete product. 4,225,357, Cl. 106-86.000.

Hoechst Aktiengesellschaft: *See—*
Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, 4,225,347, Cl. 75-257.000.
Rewitzer, Siegfried, 4,224,780, Cl. 53-436.000.
Riedl, Josef; Frohlich, Walter; and Mittermaier, Erich, 4,225,520, Cl. 260-656.00R.

Hoesch Werke Aktiengesellschaft: *See—*
Wick, Hans-Joachim, 4,225,306, Cl. 432-24.000.

Hoey, George B., to Mallinckrodt, Inc. Lower alkoxymethyl esters of 2,4,6-triiodobenzoic acid derivatives. 4,225,725, Cl. 560-37.000.

Hoffmann, Dieter. Mining drum with cutting and shearing bits on conical ring. 4,225,190, Cl. 299-89.000.

Hoffmann-La Roche Inc.: *See—*
Baggiolini, Enrico G.; and Uskokovic, Milan R., 4,225,525, Cl. 260-397.200.
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,225,527, Cl. 260-408.000.
Olson, Gary L., 4,225,514, Cl. 568-447.000.
Schmid, Max, 4,225,506, Cl. 260-343.600.

Hoffmann, Werner: *See—*
Schoettle, Klaus; Lewin, Helmut; Hoffmann, Werner; Dobler, Peter; and Gliniorz, Lothar, 4,225,099, Cl. 242-192.000.

Hogue, J. W.; Horner, B. Dean; and Foster, Dudley, to Pullman Incorporated. Railway car nailable floor. 4,224,880, Cl. 105-422.000.

Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Method for determining the pellet size distribution of a pelletizer and for controlling the output of such pelletizer. 4,225,543, Cl. 264-40.400.

Hokkai Can Co., Ltd.: *See—*
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.

Holberg, Steven E.; and Sollitto, Ronald J. Surgical scrub system. 4,225,254, Cl. 401-119.000.

Holcroft: *See—*
Meyer, Robert W.; and Lippert, Charles G., 4,225,121, Cl. 266-130.000.

Holland, William P.: *See—*
Shapiro, Jonathan S.; and Holland, William P., 4,225,787, Cl. 250-406.000.

Holley, John D. Vehicle for cleaning railway roadbeds of magnetic articles. 4,225,429, Cl. 209-215.000.

Hollymatic Corporation: *See—*
Wagner, Richard C., 4,224,716, Cl. 17-32.000.

Holmi, Ismo V. J.; and Virtanen, Ismo I., to Outokumpu Oy. Apparatus for cutting a blank sheet into strips and for stacking the strips in adjoining compartments separated by partitions. 4,224,850, Cl. 83-105.000.

Holyoke, Robert H., to General Binding Corporation. Folding machine. 4,225,128, Cl. 270-68.00A.

Holzer, Hartmut: *See—*
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.

Homeyer, Bernhard: *See—*
Maurer, Fritz; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,225,594, Cl. 424-200.000.

Honda, Munetaka: *See—*
Yoshimura, Ryoichi; Honda, Munetaka; and Hirokawa, Norio, 4,225,348, Cl. 75-257.000.

Honeywell Inc.: *See—*
Kompelien, Arlon D., 4,225,791, Cl. 250-574.000.
Peterson, Dean M.; and Skovrinski, Joseph R., 4,225,558, Cl. 422-72.000.

Honeywell Information Systems Inc.: *See—*
Hartley, Henry F.; Lemay, Richard A.; Terakawa, Kiyoshi H.; and Woods, William E., 4,225,921, Cl. 364-200.000.
Kobs, Frederick E.; Ryan, Joseph L.; Inoshita, Minoru; and Winfrey, Gerald N., 4,225,942, Cl. 364-900.000.
Porter, Marion G., 4,225,922, Cl. 364-200.000.
Suelflow, Robert E.; and Drobny, Edward M., 4,225,959, Cl. 371-38.000.

Hong, Ju H. J., to International Business Machines Corporation. Method and apparatus for testing a frequency synthesizer in an RF modem. 4,225,969, Cl. 455-67.000.

Honshu Seishi Kabushiki Kaisha: *See—*
Tsuchiya, Mikio; Kawamura, Takashi; Ootaka, Kazuo; and Ozaki, Yukio, 4,225,644, Cl. 428-215.000.

Hooker, Richard B.; and Bishop, Thomas R., to Hickory Springs Manufacturing Company. Interlocking bed frame members. 4,225,265, Cl. 403-353.000.

Hopson, Clark N. Acetabular cup for total hip replacements. 4,224,698, Cl. 3-1.912.

Horikoshi, Kouki: *See—*
Ishikawa, Hisao; Kita, Yukio; and Horikoshi, Kouki, 4,225,381, Cl. 162-51.000.

Horn, Jerry, to Zyvex International. System for monitoring unit and total quantities of a dispenser fluid. 4,225,057, Cl. 222-27.000.

Horner, B. Dean: *See—*
Hogue, J. W.; Horner, B. Dean; and Foster, Dudley, 4,224,880, Cl. 105-422.000.

Horninger, Karlheinrich, to Siemens Aktiengesellschaft. Monolithically integrated semiconductor arrangement. 4,225,876, Cl. 357-23.000.

Horodysky, Andrew G.; and Landis, Phillip S., to Mobil Oil Corporation. Process for making sulfurized olefins. 4,225,488, Cl. 260-139.000.

Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., to Exxon Research & Engineering Co. Method of making lead and bismuth pyrochlore compounds using an alkaline medium and at least one solid reactant source. 4,225,469, Cl. 252-518.000.

Hortman, Michael T.: *See—*
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,225,467, Cl. 252-478.000.

Hoshiyama, Satoshi; Fukushima, Shuichi; Kobayashi, Hiroshi; and Takamatsu, Hideki, to Nissan Chemical Industries Limited. Dimerization of butenes containing isobutene to minimize 2,2,4-trimethyl pentenes. 4,225,743, Cl. 585-512.000.

Hotten, Bruce W., to Chevron Research Company. Tetrahydropyrimidyl-substituted compounds. 4,225,712, Cl. 544-296.000.

Houser, Robert W.: *See—*
Jones, Howard; and Houser, Robert W., 4,225,730, Cl. 562-469.000.

Howard, Roy S.; Hodgson, Donald; Dale, James G.; and Hall, Clifford T. M., to Nuclear Power Company Limited. Nuclear reactor constructions. 4,225,389, Cl. 176-40.000.

Howarth, Michael S., to Imperial Chemical Industries Limited. Manufacture of esters. 4,225,503, Cl. 260-465.00D.

Howe, Milton A., Jr.: *See—*
Bieler, Anne C.; and Howe, Milton A., Jr., 4,225,373, Cl. 156-198.000.

Hsin, Chung H.: *See—*
Schwartz, Sidney J.; and Hsin, Chung H., 4,225,944, Cl. 365-15.000.

Huang, Ching-Piao. Pest and odor preventive sanitary drainer. 4,224,701, Cl. 4-206.000.

Huang, I-Der; and McCooey, Catherine, to Exxon Research & Engineering Co. Process for the continuous manufacture and separation of oxo catalysts. 4,225,458, Cl. 252-413.000.

Huang, Liang H.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,225,674, Cl. 435-122.000.

Hubbard, S. Eugene; and Meisterheim, Richard A., to Kawneer Company, Inc. Panic device actuator. 4,225,163, Cl. 292-21.000.

Hubbard, Tom W. Teaching aid for hair setting and coloring. 4,224,745, Cl. 35-59.000.

Huber, Manfred A.: *See—*
Klimek, Norbert M.; and Huber, Manfred A., 4,225,251, Cl. 400-124.000.

Huber, Reinhold; and Koster, Waldemar, to Kober AG. Highway expansion joint assembly. 4,225,267, Cl. 404-69.000.

Hubner, Armin: *See—*
Heine, Hans-Georg; Hubner, Armin; and Hartmann, Willy, 4,225,704, Cl. 542-441.000.

Huckaby, Leonard. Dewaxing valve for use in oil wells. 4,224,993, Cl. 166-325.000.

Huff, Larry D.: *See—*
Torrington, Leslie A.; and Huff, Larry D., 4,225,141, Cl. 274-9.00B.

Hughes Aircraft Company: *See—*
Yamagishi, Frederick G.; Miller, Leroy J.; Jensen, John E.; and Margerum, J. David, 4,225,454, Cl. 252-299.000.

Hughes, Donald W. K., to AMP Incorporated. Electrical connector receptacle. 4,225,209, Cl. 339-126.00R.

Hughes, Horatio, Jr.; and Schilling, Robert A., to Westvaco Corporation. Shive ratio analyzer. 4,225,385, Cl. 162-263.000.

Hugin, Walter. Drive mechanism, particularly for moving and turning the slats of a blind. 4,224,973, Cl. 160-178.00R.

Hull, Chris W.: *See—*
Simon, William F.; Torrey, William C.; and Hull, Chris W., 4,225,953, Cl. 367-117.000.

Hummel, Walter; Klinke, Gregor; and Prosperi, Alberto, to Wiegand Karlsruhe GmbH. Device for separating impurities from gases by means of a washing liquid. 4,225,326, Cl. 55-257.00R.

Hutchison, Mark A.: *See—*
McGuire, Robert C.; Selder, Albertus G.; and Hutchison, Mark A., 4,225,188, Cl. 299-64.000.

Hutson, Thomas, Jr., to Phillips Petroleum Company. Alkylation process. 4,225,742, Cl. 585-723.000.

Hutton, Thomas W.; and Lavelle, Joseph A., to Rohm and Haas Company. Curing membrane for concrete and the like. 4,225,651, Cl. 428-443.000.

Hyatt, Gilbert P. High registration photomask machine and computerized numerical control system. 4,225,225, Cl. 355-78.000.

Hydes, Paul C.; and Malerbi, Bernard W., to Johnson, Matthey & Co., Limited. Compositions containing platinum. 4,225,529, Cl. 260-429.00R.

I.E.I. Proprietary Limited: *See—*
Cole, Martin T.; and Strahan, Graeme R., 4,225,858, Cl. 340-554.000.

I.W.S. Nominee Company Limited: *See—*
Lewis, David M.; and Cockett, Keith R. F., 4,225,312, Cl. 8-115.600.

Iba, Masahisa: *See—*
Marukawa, Katsukiyo; Okamoto, Setsuo; Yamada, Kazunari; and Iba, Masahisa, 4,225,565, Cl. 423-208.000.

ICI United States, Inc.: *See—*
Gauthier, Donald R., 4,225,491, Cl. 260-156.000.

Idemitsu Kosan Company Limited: *See—*
Kobayashi, Sadami, 4,225,573, Cl. 423-638.000.

Iizuka, Haruhiko: *See—*
Sugasawa, Fukashi; Iizuka, Haruhiko; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,224,920, Cl. 123-198.00F.

Ikeda, Hitoshi: *See—*
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.

Ikeda, Yasuo, to Taito Corporation. Code converter circuitry system for selectively rotating a video display picture. 4,225,929, Cl. 364-521.000.

Ikegame, Osamu, to Tomy Kogyo Co., Inc. Metallic joint for model railroad rails. 4,225,081, Cl. 238-10.00E.

Imada, Akira; Kintaka, Kazuhiko; and Haibara, Konomi, to Takeda Chemical Industries, Ltd. Antibiotic SB-72310. 4,225,586, Cl. 424-117.000.

Imai, Hiroto, to Mitsubishi Jukogyo Kabushiki Kaisha. Knockout for punch scrap. 4,224,851, Cl. 83-117.000.

Imam, Imdad: *See—*
Barkan, Philip; and Imam, Imdad, 4,225,761, Cl. 200-144.00B.

Imperial Chemical Industries Limited: *See—*
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,225,408, Cl. 204-181.00N.
Davies, Daivd H.; and Norris, Geoffrey L. F., 4,225,593, Cl. 424-185.000.
Eckersley, Dennis, 4,225,523, Cl. 260-371.000.
Howarth, Michael S., 4,225,503, Cl. 260-465.00D.
Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., 4,225,602, Cl. 424-263.000.

Imperial Oil Limited: *See—*
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.

Inazaki, Kenzo: *See—*
Ise, Masahiro; Inazaki, Kenzo; Machino, Katsuyuki; and Suzuki, Chuji, 4,225,807, Cl. 315-169.300.

Indian Head Inc.: *See—*
Pate, Harold T., 4,225,103, Cl. 248-74.00B.

Industrial Air, Inc.: *See—*
Hicks, Harry H., 4,224,718, Cl. 19-107.000.

Industrie Pirelli Societa per Azioni: *See—*
Vecellio, Bernardino. 4,225,747, Cl. 174-25.00C.

Infeld, Peter, to Dr. Thomastik und Mitarbeiter Ohg. Tunable string holder for musical instrument. 4,224,857, Cl. 84-302.000.

Ingram, Charles E. Luggage rack. 4,225,068, Cl. 224-325.000.

Inolex Corporation: *See—*
Banik, Michael S., Jr., 4,225,622, Cl. 426-32.000.

Inomata, Koichiro; Shimanuki, Senji; and Hasegawa, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Amorphous alloy of high magnetic permeability. 4,225,339, Cl. 75-122.000.

Inoshita, Minoru: *See—*
Kobs, Frederick E.; Ryan, Joseph L.; Inoshita, Minoru; and Winfrey, Gerald N., 4,225,942, Cl. 364-900.000.

Inoue, Nobuyoshi: *See—*
Saito, Toshihisa; and Inoue, Nobuyoshi, 4,225,221, Cl. 354-234.000.

Inoue, Tadashi, to Asahi-Dow Limited. Packaged article covered with special film. 4,225,049, Cl. 215-12.00R.

Institut Francais du Petrole: *See—*
Cosyns, Jean; and Gremillon, Marc, 4,225,461, Cl. 252-439.000.

Institut National de la Recherche Agronomique: *See—*
Grosclaude, Gerard; Regnier, Jean; and Cavarroc, Marcel, 4,224,865, Cl. 99-453.000.

Instrumentation Specialties Company: *See—*
Allington, Robert W., 4,225,290, Cl. 417-18.000.

International Blind Company: *See—*
Anderson, James M.; and Anderson, Samuel J., 4,224,974, Cl. 160-178.00R.

International Business Machines Corporation: *See—*
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.
Busch, Dennis G., 4,225,943, Cl. 364-900.000.
Councill, Edwin D.; Kelly, H. Janet; and Lee, Hua-Tung, 4,225,947, Cl. 365-238.000.
Doty, Charles R., Jr.; Muehldorf, Eugen I.; and Shah, Himanshu G., 4,225,957, Cl. 371-15.000.
Hong, Ju H. J., 4,225,969, Cl. 455-67.000.
Johnson, Oliver D., 4,225,862, Cl. 340-755.000.
Kettler, Howard G.; Kolpek, Robert A.; and Rosenbaum, Walter S., 4,225,249, Cl. 400-3.000.
Langdon, Glen G., Jr.; and Mantey, Patrick E., 4,225,861, Cl. 340-703.000.
Moore, Edwin C.; Rogers, Robert J.; and Wiechman, Donald G., 4,225,770, Cl. 219-137.00R.

International Flavors & Fragrances Inc.: *See—*
Schmitt, Frederick L., 4,225,444, Cl. 252-8.600.
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,225,470, Cl. 252-522.00R.

International Paper Company: *See—*
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,225,053, Cl. 220-416.000.

International Resources Company, Ltd.: *See—*
Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mitsuo, 4,225,563, Cl. 423-20.000.

International Shoe Machine Corporation: *See—*
Becka, Michael M., 4,224,708, Cl. 12-8.200.

International Standard Electric Corporation: *See—*
Chown, Martin; and Farrington, Jeffrey G., 4,225,753, Cl. 370-4.000.

International Telephone and Telegraph Corporation: *See—*
Ghahramani, Iraj, 4,225,778, Cl. 235-92.0FL.
Griffith, Donald L.; and Dunham, Lawrence A., 4,225,760, Cl. 200-83.00R.
Hindle, Durward J., 4,225,012, Cl. 182-112.000.
Levine, Arnold M., 4,225,866, Cl. 343-17.700.

InterNorth, Inc.: *See—*
Dickey, Leland C., 4,225,370, Cl. 156-86.000.

Interox Chemicals Limited: *See—*
McCrudden, Joseph E.; and Smith, Alan, 4,225,451, Cl. 252-99.000.

Inui, Tomoji: *See—*
Nakazawa, Terumi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; Nagae, Hiromitsu; and Inui, Tomoji, 4,224,917, Cl. 123-647.000.

Inventa AG fur Forschung und Patentverwertung, Zurich: *See—*
Schmid, Eduard; and Griehl, Wolfgang, 4,225,699, Cl. 528-324.000.

Iowa State University Research Foundation, Inc.: *See—*
Switzer, William P.; and Farrington, Daniel O., 4,225,583, Cl. 424-92.000.

Ipri, Alfred C., to RCA Corporation. Short channel MOS devices and the method of manufacturing same. 4,225,875, Cl. 357-23.000.

Ise, Masahiro; Inazaki, Kenzo; Machino, Katsuyuki; and Suzuki, Chuji, to Sharp Kabushiki Kaisha. Readout scheme of a matrix type thin-film EL display panel. 4,225,807, Cl. 315-169.300.

Iseki, Kazuo, to Ohta Company Limited. Hinge. 4,224,715, Cl. 16-135.000.

Ishibashi, Yoshiaki: *See—*
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.

Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,225,309, Cl. 8-148.000.

Ishii, Tsuneji; Tsukada, Tetsuro; Abe, Takeshi; and Koyama, Tsutomu, to Asahi Glass Company, Limited. Method of laminating plastic film and shaped metal substrates. 4,225,379, Cl. 156-629.000.

Ishikawa, Hisao; Kita, Yukio; and Horikoshi, Kouki, to Oji Paper Co., Ltd. Method for removing odor from fluid. 4,225,381, Cl. 162-51.000.

Ishikawa, Masao; and Shinichi, Orii. Headlight beam control system for motor vehicles. 4,225,902, Cl. 362-40.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Nakanishi, Takenori; Yoshikawa, Yuji; and Tagaeto, Takao, 4,225,560, Cl. 422-159.000.

Iskra Zp Ljubljana, O. Sub. O.: *See*—
Vrsnak, Franc; Zadravec, Jurica; and Pecenko, Igor, 4,225,835, Cl. 335-78.000.

Itek Corporation: *See*—
Berger, Michael J.; and French, Hollis E., 4,225,631, Cl. 427-54.100.

Ithaca Textiles, Inc.: *See*—
Wehrmann, Nicholas; and Williams, Charlie L., 4,224,693, Cl. 2-241.000.

Ito, Osamu: *See*—
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.

Ito, Takashi: *See*—
Matsui, Hironori; and Ito, Takashi, 4,225,569, Cl. 423-445.000.

Itoh, Kosuke: *See*—
Umemura, Sumio; Kitoh, Ryozo; Itoh, Shigeru; Arima, Yasutaka; Itoh, Kosuke; and Fukui, Hideaki, 4,225,462, Cl. 252-440.000.

Itoh, Nobuo: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.

Itoh, Shigeru: *See*—
Umemura, Sumio; Kitoh, Ryozo; Itoh, Shigeru; Arima, Yasutaka; Itoh, Kosuke; and Fukui, Hideaki, 4,225,462, Cl. 252-440.000.

ITT Industries, Inc.: *See*—
Belart, Juan, 4,225,022, Cl. 188-348.000.
Orszullok, Willy, 4,224,962, Cl. 137-465.000.
Ostwald, Fritz, 4,224,791, Cl. 60-397.000.
Prohaska, Hans; and Theurer, Karl-Heinz, 4,224,832, Cl. 74-388.00R.

Iwami, Hiroyuki: *See*—
Yotsutsuji, Akira; Ueda, Seiichi; and Iwami, Hiroyuki, 4,225,109, Cl. 249-111.000.

Iwamoto, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Noise suppression circuit for use with FM receiver. 4,225,975, Cl. 455-212.000.

Iwanaga, Kazuyoshi: *See*—
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,225,026, Cl. 192-70.200.

Iwasaki Tsushinki Kabushiki Kaisha: *See*—
Ushiro, Takanori, 4,225,810, Cl. 315-392.000.

Iwata, Kohki: *See*—
Takefuta, Hideyasu; Iwata, Kohki; and Yamaguchi, Toshio, 4,225,027, Cl. 192-84.00T.

Iwata, Minoru: *See*—
Mitsuda, Tadao; Iwata, Minoru; and Sugiura, Masatoshi, 4,224,911, Cl. 123-589.000.

J. I. Case Company: *See*—
Baker, Joe L.; and Roth, Lanny J., 4,225,283, Cl. 414-723.000.

J & L Machinery, Inc.: *See*—
Jacobson, Gerald D., 4,225,074, Cl. 227-2.000.

J. M. Voith GmbH: *See*—
Fork, Werner, 4,225,286, Cl. 416-4.000.

Jablonsky, Erich, to Zahnradfabrik Friedrichshafen, AG. Rack and pinion steering, especially for motor vehicles. 4,224,833, Cl. 74-422.000.

Jackson, Lynden A.; and Bates, Roger J., to Post Office, The. Apparatus for forming dielectric optical waveguide cables. 4,224,787, Cl. 57-15.000.

Jacobs, Philip C., Jr., to Gould Inc. Electric fuse with support for helically wound fusible element. 4,225,840, Cl. 337-273.000.

Jacobson, Gerald D., to J & L Machinery, Inc. Carpet tack-strip installing machine. 4,225,074, Cl. 227-2.000.

Jacobsson, Sten A. L.: *See*—
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., 4,225,580, Cl. 424-78.000.

Jacoub, Michel; and Nourigat, Gerard, to Compagnie Generale d'Automatisme. Method and device for superposing a modifiable magnetic code on a fixed bar code. 4,225,780, Cl. 235-449.000.

Jagenberg Werke Atkiengesellschaft: *See*—
Beerenwinkel, Dieter, 4,224,848, Cl. 83-76.000.

Jahn, Walter: *See*—
Faulstich, Marga; Jahn, Walter; Krolla, Georg; and Neuroth, Norbert, 4,225,459, Cl. 252-301.40P.

Janssen Pharmaceutica N.V.: *See*—
Sanczuk, Stefan; and Hermans, Hubert K. F., 4,225,606, Cl. 424-251.000.

Jaramillo, Giovanni; Teitzman, Melvin; and Lipinski, Richard D., to Motorola, Inc. Splash proof portable two-way data terminal/radio. 4,225,970, Cl. 455-89.000.

Jaroche, Ralph J., to Stroh Brewery Company, The. Display hanger and method of installation therefor. 4,225,108, Cl. 248-544.000.

Jean, Pierre, to GAZ-Transport. Thermally insulated tank for land storage of low temperature liquids. 4,225,054, Cl. 220-436.000.

Jecmen, Elinore M., executrix nominee: *See*—
Jecmen, James M., deceased; and Jecmen, John J., 4,224,767, Cl. 49-488.000.

Jecmen, James M., deceased (by Jecmen, Elinore M., executrix nominee); and Jecmen, John J., to Harris Preble Company. Fire stop safety astragal. 4,224,767, Cl. 49-488.000.

Jecmen, John J.: *See*—
Jecmen, James M., deceased; and Jecmen, John J., 4,224,767, Cl. 49-488.000.

JENAer Glaswerk Schott & Gen.: *See*—
Faulstich, Marga; Jahn, Walter; Krolla, Georg; and Neuroth, Norbert, 4,225,459, Cl. 252-301.40P.

Jensen, John E.: *See*—
Yamagishi, Frederick G.; Miller, Leroy J.; Jensen, John E.; and Margerum, J. David, 4,225,454, Cl. 252-299.000.

Jensen, Knud. Blocking device for use in a sewer manhole. 4,225,435, Cl. 210-153.000.

Jeswani, Partab T.; and Ruflin, Gerard T., to General Motors Corporation. Fuel system flow process. 4,224,823, Cl. 73-118.000.

Jewett, James W.: *See*—
Tone, Melvin N.; Zimmer, Larry J.; and Jewett, James W., 4,224,994, Cl. 169-9.000.

Jindal, Prem C.: *See*—
Jones, William R.; and Jindal, Prem C., 4,225,744, Cl. 13-20.000.

John MacDonald & Co. (Pneumatic Tools) Ltd.: *See*—
Allan, David T., 4,225,187, Cl. 299-37.000.

John Wyeth & Brother Limited: *See*—
Ward, Terence J., 4,225,613, Cl. 424-274.000.

Johnson, Curtiss S., Jr., to C. Sherman Johnson Co., Inc. Backstay tensioning device. 4,224,890, Cl. 114-109.000.

Johnson, Kevin T.: *See*—
Wall, Thomas H.; and Johnson, Kevin T., 4,225,542, Cl. 261-142.000.

Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., to Imperial Chemical Industries Limited. Tetrahydropyridine derivative useful for inhibiting blood platelet aggregation. 4,225,602, Cl. 424-263.000.

Johnson, Matthey & Co., Limited: *See*—
Hydes, Paul C.; and Malerbi, Bernard W., 4,225,529, Cl. 260-429.00R.

Johnson, Oliver D., to International Business Machines Corporation. Tuning fork oscillator driven light emitting diode display unit. 4,225,862, Cl. 340-755.000.

Johnson, Robert H.; Ford, Dixon A.; Reynolds, Gordon S.; and Sorenson, James L., to Sorenson Research Co., Inc. Cannula and method for bidirectional blood flow. 4,224,943, Cl. 128-214.400.

Johnston, Robert J.; Layciak, Stephen G.; and Dobrosielski, Stephen S., to Westinghouse Electric Corp. Switch structure. 4,225,765, Cl. 200-307.000.

Johnston, Roy C.: *See*—
Harrison, Earnest R.; and Johnston, Roy C., 4,225,009, Cl. 181-120.000.

Jones, David H.; Shingles, Terry; Kelly, Felix T.; and Dry, Mark E., to Badger Company, Inc., The. Fluidization promoters. 4,225,531, Cl. 260-449.60R.

Jones, Haydn F.: *See*—
Waites, Geoffrey M. H.; Ford, William C. L.; Khan, Riaz A.; and Jones, Haydn F., 4,225,590, Cl. 424-180.000.

Jones, Howard; and Houser, Robert W., to Merck & Co., Inc. Process for preparing 4-(2,4-difluorophenyl)-salicyclic acid. 4,225,730, Cl. 562-469.000.

Jones, Phillip H.: *See*—
Price, Douglas R.; Dalessio, Frederick F.; and Jones, Phillip H., 4,225,949, Cl. 367-96.000.

Jones, Samuel H.; and Stawarz, Dick A., to LaSalle Steel Company. Method and apparatus for cold finishing of metals. 4,224,818, Cl. 72-284.000.

Jones, William R.; and Jindal, Prem C., to Abar Corporation. Fixed thermocouple for vacuum electric furnaces. 4,225,744, Cl. 13-20.000.

Joseph, Christian M., to Manufacture de Produits Chimiques Protex S.A. Gypsum plaster. 4,225,361, Cl. 106-111.000.

Jost, Jochen, to AGFA-Gevaert, A.G. Slide frames and a slide magazine for storing such slide frames. 4,225,044, Cl. 206-456.000.

Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., to Automated Building Components, Inc. Rolled nail strips packed without spools. 4,225,095, Cl. 242-1.000.

Justice, James W. H.; Kennedy, Paul G.; and Miller, Robert C., to Westinghouse Electric Corp. Method and apparatus for monitoring arc welding. 4,225,771, Cl. 219-137.00R.

Kabaian, Jimmy H.: *See*—
Chang, Tien-Lin; Kabaian, Jimmy H.; Riganati, John P.; and White, Stanley A., 4,225,850, Cl. 340-146.3OE.

Kabushiki Kaisha Daini Seikosha: *See*—
Sasaki, Seiko; and Asano, Kazuhiro, 4,224,789, Cl. 368-185.000.

Kabushiki Kaisha Mino Seisakusho: *See*—
Mino, Masao, 4,225,096, Cl. 242-43.200.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,224,872, Cl. 101-288.000.

Kadota, Michio; Sato, Tomoharu; and Suzuki, Kenji, to Murata Manufacturing Co., Ltd. Method for manufacturing an acoustic surface wave interaction device. 4,224,725, Cl. 29-25.350.

Kagerhuber, Franz; and Lederer, Wolfgang, to Voest-Alpine Aktiengesellschaft. Shearing machine to be used for a run-out roller table of a continuous casting plant. 4,224,852, Cl. 83-319.000.

Kago, Yoshiyuki: *See*—
Kotera, Masao; and Kago, Yoshiyuki, 4,225,950, Cl. 367-97.000.

Kahlden, Gerald D. Combined continuity and voltage test instrument. 4,225,817, Cl. 324-133.000.

Kaiser, Roman, to Givaudan Corporation. 1,4-Epoxy-1,3,3-trimethyl-2-(2-buten-1-ylidene)-cyclohexanes. 4,225,501, Cl. 260-346.220.

Kako, Hiroyoshi; and Kobayashi, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for painting by electrostatic powder spraying. 4,225,090, Cl. 239-692.000.

Kakuse, Junko: *See*—
Niimi, Yukihisa; Kakuse, Junko; Sato, Toshio; and Kawanaka, Hideo, 4,225,311, Cl. 8-524.000.

Kakuwa, Seiichi; Hattori, Toshihiko; Yamagata, Ichiro; and Yamada, Toshio, to Toyo Kogyo Co., Ltd. Oil seal means for rotary piston

engines including a nitrided and ground surface. 4,225,294, Cl. 418-142.000.

Kakuzen, Hideo; Kurosaki, Shiro; and Usui, Yuichi, to Sumitomo Electric Industries, Ltd. Process for producing glass member. 4,225,330, Cl. 65-18.000.

Kaltenbach & Voigt GmbH & Co.: *See*—
Lohn, Gerd, 4,225,308, Cl. 433-132.000.

Kama, Haruo: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.

Kamath, Krishna I.: *See*—
Comberiati, Joseph R.; Locke, Charles D.; and Kamath, Krishna I., 4,224,992, Cl. 166-273.000.

Kameda, Mitsuo: *See*—
Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mitsuo, 4,225,563, Cl. 423-20.000.

Kameyama, Tetsuya; Dokiya, Masayuki; and Fukuda, Kenzo, to Agency of Industrial Science & Technology. Method for hydrogenating an aromatic compound. 4,225,733, Cl. 585-269.000.

Kaminskas, Rimvydas A., to Standun, Inc. Internal gaseous fluid stripper for can bodymakers and the like. 4,224,819, Cl. 72-345.000.

Kamiya, Takashi; and Takaya, Takao, to Fujisawa Pharmaceutical Company, Limited. 2-Lower alkyl-7-substituted-2 or 3-cephem-4-carboxylic acid compounds. 4,225,707, Cl. 544-16.000.

Kamiyama, Setsuo; Shiozawa, Kouji; Okumura, Yoshiharu; and Kaneko, Katsumi, to Toa Nenryo Kogyo Kabushiki Kaisha. Process for the production of unsaturated esters. 4,225,727, Cl. 560-244.000.

Kampner, Stanley: *See*—
Murray, Ian; and Kampner, Stanley, 4,224,696, Cl. 3-1.911.
Murray, Ian; and Kampner, Stanley, 4,224,697, Cl. 3-1.911.

Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, to Konishiroku Photo Industry Co., Ltd. 2-Sulfamoyl-5-sulfamido-1-naphthols. 4,225,708, Cl. 544-159.000.

Kanebo Ltd.: *See*—
Matsui, Hironori; and Ito, Takashi, 4,225,569, Cl. 423-445.000.

Kaneko, Chikara: *See*—
Ochi, Kiyoshige; Matsunaga, Isao; Shindo, Minoru; and Kaneko, Chikara, 4,225,524, Cl. 260-397.200.

Kaneko, Katsumi: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Okumura, Yoshiharu; and Kaneko, Katsumi, 4,225,727, Cl. 560-244.000.

Kangle, Purushottam J.; and Milicevic, Branimir, to Ciba-Geigy, AG. Dyeing and printing processes. 4,225,313, Cl. 8-474.000.

Kanzaka, Yoshihiro, to Yoshida Kogyo K.K. Method and apparatus for removing fastener elements from a slide fastener chain. 4,224,730, Cl. 29-408.000.

Kao Soap Co., Ltd.: *See*—
Niimi, Yukihisa; Kakuse, Junko; Sato, Toshio; and Kawanaka, Hideo, 4,225,311, Cl. 8-524.000.

Kaplan, Donald S., to American Cyanamid Company. Surgical sutures derived from segmented polyether-ester block copolymers. 4,224,946, Cl. 128-335.500.

Kaplan, Leonard A., to RCA Corporation. Overcurrent protection circuit for power transistor. 4,225,897, Cl. 361-87.000.

Kaplan, Neil, to Hi-Tech Industries, Inc. Thermosetting molding resin compositions. 4,225,554, Cl. 264-328.200.

Kaplan, Stephen J.; and Lengyel, Ladislaus S. Valve device for diverting and combining fluid flows. 4,224,958, Cl. 137-340.000.

Kappos, Christopher. Portable beverage cooler and dispenser. 4,225,059, Cl. 222-146.00C.

Kaptay, Gyorgy: *See*—
Matyasi, Jozsef; Kokeny, Bela; Zsembery, Laszlo; Kaptay, Gyorgy; and Nemeth, Sandor, 4,225,639, Cl. 427-372.200.

Karasa, Alvydas P.: *See*—
Gantz, Carroll M.; Pugh, Timothy G.; and Karasa, Alvydas P., 4,225,814, Cl. 320-2.000.

Kariatsumari, Keiichiro, to Tokyo Shibaura Electric Co., Ltd. Amplitude modulation circuit for a transmitter. 4,225,822, Cl. 455-108.000.

Karim, Khalid A.; and Rea, James H., to Gulf Oil Corporation. Process for molding acetylene end-capped polyimide oligomers. 4,225,550, Cl. 264-236.000.

Kariyama, Shiso: *See*—
Shimizu, Kazuma; Kariyama, Shiso; Takeda, Yoshimitsu; and Yoshimura, Masato, 4,225,295, Cl. 418-142.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Wilkens, Christian, 4,224,809, Cl. 66-207.000.

Karn, William S. Spiral wound electrodialysis cell. 4,225,413, Cl. 204-301.000.

Kashiwaya, Mineo: *See*—
Takamaru, Takeshi; Kashiwaya, Mineo; Morita, Kiyomi; and Oobayashi, Seiji, 4,225,535, Cl. 261-34.00B.

Katoogi, Masayuki: *See*—
Moriyama, Hideo; and Katoogi, Masayuki, 4,225,905, Cl. 362-216.000.

Katsuno, Takeharu: *See*—
Takayama, Shoichiro; Nakagata, Norio; and Katsuno, Takeharu, 4,225,888, Cl. 358-288.000.

Katz, Otto, to Ledermann GmbH & Co. Drilling tool. 4,225,274, Cl. 408-225.000.

Kaufmann, John C., to Armstrong Cork Company. Decorative flooring. 4,225,374, Cl. 156-220.000.

Kauschke, Michael, to Carl Munters-EUROFORM. Packing for heat and material exchange, particularly for cooling towers. 4,225,540, Cl. 261-112.000.

Kawabuchi, Masami; Sato, Jun-ichi; Nagai, Kiyotaka; Fukukita, Hiroshi; and Fukumoto, Akira, to Matsushita Electric Industrial Co., Ltd. Two-dimensional linear B-scan ultrasound diagnostic apparatus with phase and amplitude tapering. 4,224,829, Cl. 73-626.000.

Kawamura, Koji; and Hayashi, Hideyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Anti-squeal shim used in a disc-brake. 4,225,021, Cl. 188-73.500.

Kawamura, Takashi: *See*—
Tsuchiya, Mikio; Kawamura, Takashi; Ootaka, Kazuo; and Ozaki, Yukio, 4,225,644, Cl. 428-215.000.

Kawanaka, Hideo: *See*—
Niimi, Yukihisa; Kakuse, Junko; Sato, Toshio; and Kawanaka, Hideo, 4,225,311, Cl. 8-524.000.

Kawano, Hirosige: *See*—
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; and Fujiwara, Kiyoshi, 4,225,079, Cl. 233-15.000.

Kawase, Tooru: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,225,925, Cl. 364-431.000.

Kawneer Company, Inc.: *See*—
Hubbard, S. Eugene; and Meisterheim, Richard A., 4,225,163, Cl. 292-21.000.

Kay, Arthur H.: *See*—
Dziewulski, Ted; and Kay, Arthur H., 4,224,764, Cl. 47-71.000.

Kearney, Donald R.; Trokhan, Paul D.; and Wells, Edward R., to Procter & Gamble Company, The. Method of making ply-separable paper. 4,225,382, Cl. 162-111.000.

Keene Corporation: *See*—
Dougall, Robert K., 4,225,200, Cl. 308-235.000.

Keeney, Marvin F., to General Electric Company. Coincidence circuit for a protective relay circuit. 4,225,795, Cl. 307-232.000.

Keiper Automobiltechnik GmbH & Co. KG: *See*—
Kluting, Bernd, 4,225,177, Cl. 297-216.000.
Strowick, Willibald, 4,225,184, Cl. 297-468.000.
Werner, Paul, 4,225,182, Cl. 297-362.000.

Kelley, William J., to Mattel, Inc. Toy perfume maker. 4,224,757, Cl. 46-1.00R.

Kelly, Donald A. Variable speed, condensing steam turbine and power system. 4,224,797, Cl. 60-652.000.

Kelly, Felix T.: *See*—
Jones, David H.; Shingles, Terry; Kelly, Felix T.; and Dry, Mark E., 4,225,531, Cl. 260-449.60R.

Kelly, H. Janet: *See*—
Councill, Edwin D.; Kelly, H. Janet; and Lee, Hua-Tung, 4,225,947, Cl. 365-238.000.

Kempter, Karl, to Siemens Aktiengesellschaft. Printing drum for an electrostatic imaging process with a doped amorphous silicon layer. 4,225,222, Cl. 355-3.0DR.

Kendall Company, The: *See*—
Taylor, Glenn N.; and Patel, Bhupendra C., 4,225,371, Cl. 156-152.000.

Kennedy, Paul G.: *See*—
Justice, James W. H.; Kennedy, Paul G.; and Miller, Robert C., 4,225,771, Cl. 219-137.00R.

Kern, Winfried: *See*—
Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, 4,225,347, Cl. 75-257.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Divisek, Jiri; and Mergel, Jurgen, 4,225,401, Cl. 204-129.000.

Kerr-McGee Corporation: *See*—
Graham, Paul R.; and Riggs, Olen L., Jr., 4,225,396, Cl. 204-1.500.
Rhodes, Donald E., 4,225,420, Cl. 208-177.000.

Kesselman, David A. Tamper-resistant fastener for utility meters. 4,225,165, Cl. 292-256.670.

Kettler, Howard G.; Kolpek, Robert A.; and Rosenbaum, Walter S., to International Business Machines Corporation. Variable character spacing matrix for proportional spacing printing systems. 4,225,249, Cl. 400-3.000.

Keystone Industries, Inc.: *See*—
Van Auken, Charles L., 4,224,879, Cl. 105-282.00P.

Khan, Riaz A.: *See*—
Waites, Geoffrey M. H.; Ford, William C. L.; Khan, Riaz A.; and Jones, Haydn F., 4,225,590, Cl. 424-180.000.

Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, to Ajinomoto Company, Incorporated. Fungicidal and bactericidal compositions and method for protecting plants by use thereof. 4,225,585, Cl. 424-114.000.

Kilian, John P.; and Brown, John A., to United States of America, Air Force. Hydraulic decelerator with segmented cylinder. 4,225,016, Cl. 188-38.000.

Kilman, Lowell E., Jr. Automatic indicator for a game. 4,225,030, Cl. 194-12.000.

Kim, Sunyong P. Shoe ventilating insole. 4,224,746, Cl. 36-3.00B.

Kimura, Shiro G.: *See*—
Zarchy, Andrew S.; and Kimura, Shiro G., 4,225,323, Cl. 55-11.000.

King, Stephen P.: *See*—
Vincent, Alan H.; and King, Stephen P., 4,225,287, Cl. 416-145.000.

Kintaka, Kazuhiko: *See*—
Imada, Akira; Kintaka, Kazuhiko; and Haibara, Konomi, 4,225,586, Cl. 424-117.000.

Kinzler, Jack A.; Heffernan, James T.; Fehrenkamp, Leroy G.; and Lee, William S., to United States of America, National Aeronautics and Space Administration. Surface finishing. 4,225,372, Cl. 156-154.000.

Kiray, Joseph D. Device for teaching batting techniques. 4,225,133, Cl. 273-26.00R.

Kireev, Fagim K.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Kirkpatrick, Kenneth L.; Spicer, Dalton H.; and Oka, Ken K., to Deere & Company. Side draft stabilizer. 4,224,783, Cl. 56-13.500.

Kishlar, Alexandr S.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Kissling, Bruno: *See*—
Acton, Brian; Kissling, Bruno; Robinson, Tibor; and Urosevic, Milica, 4,225,310, Cl. 8-491.000.

Kita, Yukio: *See*—
Ishikawa, Hisao; Kita, Yukio; and Horikoshi, Kouki, 4,225,381, Cl. 162-51.000.

Kitoh, Ryozo: *See*—
Umemura, Sumio; Kitoh, Ryozo; Itoh, Shigeru; Arima, Yasutaka; Itoh, Kosuke; and Fukui, Hideaki, 4,225,462, Cl. 252-440.000.

Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,225,470, Cl. 252-522.00R.

Kiyono, Tetsuhiro: *See*—
Nakamura, Moritoshi; Mutoh, Ichiro; and Kiyono, Tetsuhiro, 4,225,843, Cl. 338-120.000.

Klauke, Erich: *See*—
Marhold, Albrecht; and Klauke, Erich, 4,225,731, Cl. 568-775.000.
Sirrenberg, Wilhelm; Klauke, Erich; Brandes, Wilhelm; and Roessler, Peter, 4,225,618, Cl. 424-322.000.

Klein, Dominique, to Manufacture Metallurgique de Tournus. Method of manufacturing composite strips by continuous casting. 4,224,978, Cl. 164-86.000.

Klein, Richard F. Adjustable proportioning valve. 4,224,956, Cl. 137-114.000.

Klein, Yitzhak; Goldstein, Jonathan R.; Valentina, Perach; and Kobliakov, Esther. Separators for secondary cells and similar systems. 4,225,657, Cl. 429-248.000.

Kleinberg, Israel. Means and method for improving defenses against caries. 4,225,579, Cl. 424-48.000.

Kleine, Charles A.; and Belangee, Kenneth, to Olin Corporation. Apparatus and process for making tube in sheet heat exchangers. 4,224,817, Cl. 72-54.000.

Kleven, Lowell A.: *See*—
Werner, Frank D.; Kleven, Lowell A.; Case, James T.; and Bloomfield, Roger D., 4,224,928, Cl. 126-450.000.

Klimek, Norbert M.; and Huber, Manfred A., to Rank Organisation Limited, The. Electro-mechanical printing apparatus. 4,225,251, Cl. 400-124.000.

Kling-Tecs, Inc.: *See*—
Roberts, John S., 4,225,299, Cl. 425-72.00S.

Klinke, Gregor: *See*—
Hummel, Walter; Klinke, Gregor; and Prosperi, Alberto, 4,225,326, Cl. 55-257.00R.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Moser, Gottfried, 4,225,176, Cl. 296-190.000.

Kloeckner Werke AG: *See*—
Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, 4,224,843, Cl. 81-57.380.

Kluting, Bernd, to Keiper Automobiltechnik GmbH & Co. KG. Inertia activated locking device for vehicle seats. 4,225,177, Cl. 297-216.000.

Knapp, Heinrich, to Robert Bosch GmbH. Fuel injection apparatus. 4,224,914, Cl. 123-452.000.

Knell, Everett W.: *See*—
Mirza, Zia I.; Knell, Everett W.; and Winter, Bruce L., 4,225,415, Cl. 208-8.00R.

Knemeyer, Friedel S., to General Electric Company. Composite compact components fabricated with high temperature brazing filler metal and method for making same. 4,225,322, Cl. 51-295.000.

Knippel, Willis H.; and Schmitz, Thomas R., to Pullman Incorporated. Static switching apparatus for passenger vehicle. 4,224,875, Cl. 104-130.000.

Knoski, Jerry L. Quick change wheel assembly. 4,225,191, Cl. 301-9.0DN.

Kobashi, Mamoru: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,225,925, Cl. 364-431.000.

Kobayashi, Hiroshi: *See*—
Hoshiyama, Satoshi; Fukushima, Shuichi; Kobayashi, Hiroshi; and Takamatsu, Hideki, 4,225,743, Cl. 585-512.000.

Kobayashi, Kaisuyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Tripod-type universal joint with a snap-on retainer. 4,224,806, Cl. 64-21.000.

Kobayashi, Kazuo: *See*—
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,224,918, Cl. 123-657.000.

Kobayashi, Kazutoshi: *See*—
Nakazawa, Terumi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; Nagae, Hiromitsu; and Inui, Tomoji, 4,224,917, Cl. 123-647.000.

Kobayashi, Nobuo: *See*—
Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,225,090, Cl. 239-692.000.

Kobayashi, Ryuichiro: *See*—
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, 4,225,708, Cl. 544-159.000.

Kobayashi, Sadami, to Idemitsu Kosan Company Limited. Process for reductive calcining of magnesium sulfate. 4,225,573, Cl. 423-638.000.

Kobayashi, Tatsuhiko: *See*—
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, 4,225,708, Cl. 544-159.000.

Kober AG: *See*—
Huber, Reinhold; and Koster, Waldemar, 4,225,267. Cl. 404-69.000.

Kobliakov, Esther: *See*—
Klein, Yitzhak; Goldstein, Jonathan R.; Valentina, Perach; and Kobliakov, Esther, 4,225,657, Cl. 429-248.000.

Kobs, Frederick E.; Ryan, Joseph L.; Inoshita, Minoru; and Winfrey, Gerald N., to Honeywell Information Systems Inc. Daisy chaining of device interrupts in a cathode ray tube device. 4,225,942, Cl. 364-900.000.

Koehler Manufacturing Company: *See*—
Gulliksen, John E.; and Guimond, Roy A., 4,225,906, Cl. 362-254.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Wieland, Erich G., 4,224,873, Cl. 101-409.000.

Kogler, Georg: *See*—
Kuhnlein, Hans; Schalk, Karl; and Kogler, Georg, 4,225,811, Cl. 318-261.000.

Kogler, Peter: *See*—
Zitz, Alfred; Schetina, Otto; and Kogler, Peter, 4,225,144, Cl. 277-12.000.

Kohler, George O.: *See*—
Saunders, Robert M.; and Kohler, George O., 4,225,629, Cl. 426-583.000.

Kokeny, Bela: *See*—
Matyasi, Jozsef; Kokeny, Bela; Zsembery, Laszlo; Kaptay, Gyorgy; and Nemeth, Sandor, 4,225,639, Cl. 427-372.200.

Kollectible Kontainer Enterprises Ltd.: *See*—
Skaggs, Kenneth R., 4,225,039, Cl. 206-193.000.

Kollmeyer, Willy D., to Shell Oil Company. Process for preparing 3-azabicyclo(3.1.0)hexane-2-carbonitrile. 4,225,499, Cl. 260-326.620.

Kolpek, Robert A.: *See*—
Kettler, Howard G.; Kolpek, Robert A.; and Rosenbaum, Walter S., 4,225,249, Cl. 400-3.000.

Komorn, Yves: *See*—
Biola, Georges; Komorn, Yves; and Limongi, Eric, 4,225,516, Cl. 568-41.000.

Kompelien, Arlon D., to Honeywell Inc. Optical smoke detector circuit. 4,225,791, Cl. 250-574.000.

Kondo, Shiro; and Watanabe, Yoshinori, to Alps Electric Co., Ltd. Switch operated axially or rotatably. 4,225,758, Cl. 200-4.000.

Kondou, Takayasu: *See*—
Ando, Shigeo; and Kondou, Takayasu, 4,224,856, Cl. 84-1.190.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, 4,225,708, Cl. 544-159.000.

Kono, Sadamitsu: *See*—
Kuroki, Masataka; Kono, Sadamitsu; and Shioka, Kazuyuki, 4,225,721, Cl. 548-246.000.

Koop, Nicholas S.; and Morrissey, William J., to Medtronic, Inc. Niobium coatings for joining ceramic to metal. 4,225,262, Cl. 403-272.000.

Koopman, Robert J. Remotely operable trailer hitch. 4,225,149, Cl. 280-477.000.

Kopfli, Markus: *See*—
Zetting, Alois; and Kopfli, Markus, 4,225,859, Cl. 340-566.000.

Koppers Company, Inc.: *See*—
Perch, Michael; and Peterson, Alex, Jr., 4,225,391, Cl. 201-6.000.

Korenko, Michael K., to United States of America, Energy. Method for heat treating iron-nickel-chromium alloy. 4,225,363, Cl. 148-12.70N.

Korenko, Michael K.: *See*—
Gibson, Robert C.; and Korenko, Michael K., 4,225,364, Cl. 148-31.000.

Kosarin, Norman D.; and Finkel, Gilbert. Process for reducing caloric content of coconut. 4,225,624, Cl. 426-93.000.

Koshiyama, Isamu; and Senda, Tetsuji, to Fujimi Kenmazai Kogyo Co. Ltd. Compositions for polishing synthetic resin. 4,225,349, Cl. 106-3.000.

Koster, Waldemar: *See*—
Huber, Reinhold; and Koster, Waldemar, 4,225,267, Cl. 404-69.000.

Kosuga, Tadashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.

Kotera, Masao; and Kago, Yoshiyuki, to Nippon Soken, Inc. Automobile distance measuring apparatus. 4,225,950, Cl. 367-97.000.

Kotrc, Bohumir: *See*—
Rysanek, Duson; Kotrc, Bohumir; Hamalcik, Jaroslav; and Olejnik, Peter, 4,225,820, Cl. 1324-450.000.

Kotthaus, Erich, to Oerlikon-Buhrle AG. Mating spur gears. 4,224,834, Cl. 74-462.000.

Koyama, Tsutomu: *See—*
Ishii, Tsuneji; Tsukada, Tetsuro; Abe, Takeshi; and Koyama, Tsutomu, 4,225,379, Cl. 156-629.000.
Kraemer, Dieter: *See—*
Hartl, Roland; Helm, Dieter; and Kraemer, Dieter, 4,225,557, Cl. 422-56.000.
Krall, Hermann D.; and Schwarz, Herbert, to Bayer Aktiengesellschaft. Preparation of perchloro-2,5-diaza-1,5-hexadiene. 4,225,510, Cl. 260-566.00D.
Kraus, Charles E., to Excelermatic Inc. Traction roller transmission. 4,224,840, Cl. 74-798.000.
Kraus, Frederick L., to General Electric Company. Electric motor control system. 4,225,812, Cl. 318-349.000.
Kreuter, Jorg; and Speiser, Peter P., to Kreuter, Jorg; and Speiser, Peter Paul. Biological materials. 4,225,581, Cl. 424-88.000.
Kristiansen, Odd: *See—*
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,225,616, Cl. 424-305.000.
Kroenke, William J., to B. F. Goodrich Company, The. Tripentylammonium decamolybdate and composition containing same. 4,225,484, Cl. 260-45.75R.
Krolla, Georg: *See—*
Faulstich, Marga; Jahn, Walter; Krolla, Georg; and Neuroth, Norbert, 4,225,459, Cl. 252-301.40P.
Krzok, Peter, to Daimler-Benz Aktiengesellschaft. Vertically adjustable mounting arrangement for safety belts at a side rail of an automotive vehicle. 4,225,185, Cl. 297-468.000.
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, to Kurosaki Refractories Co., Ltd. Apparatus for applying refractory material onto the inner surface of a furnace. 4,225,083, Cl. 239-132.300.
Kugel, Roger W., to Nalco Chemical Company. Alkyl phenoxy poly(ethyleneoxy)ethanol in fuel oil to prevent coal particles from freezing together. 4,225,317, Cl. 44-6.000.
Kugler, Siegfried: *See—*
Muller, Dieter; Endlich, Wilhelm; and Kugler, Siegfried, 4,224,971, Cl. 151-41.700.
Kuhn, Robert L.: *See—*
Fox, David H.; and Kuhn, Robert L., 4,225,759, Cl. 200-19.00M.
Kuhnlein, Hans; Schalk, Karl; and Kogler, Georg, to Siemens Aktiengesellschaft. Direct current motor with polyphase stator winding and electronic commutating device controlled by an angular position transmitter. 4,225,811, Cl. 318-261.000.
Kulke, Gunter; and Eckert, Konrad, to Robert Bosch GmbH. Fuel injection nozzle. 4,225,088, Cl. 239-533.500.
Kullman, Russell M. H.: *See—*
Frank, Arlen W.; Daigle, Donald J.; and Kullman, Russell M. H., 4,225,512, Cl. 260-583.00E.
Kulon, Robert E.: *See—*
Rosin, George C.; and Kulon, Robert E., 4,224,979, Cl. 164-130.000.
Kumagai, Tadashi, to Alps Electric Co., Ltd. Local oscillator circuit having two phase locked loops having respective frequency dividers with a common division ratio. 4,225,829, Cl. 331-1.00A.
Kumita, Izumi: *See—*
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,225,675, Cl. 435-215.000.
Kuo, Chang-Kiang, to Texas Instruments Incorporated. Random access MOS memory cell using double level polysilicon. 4,225,945, Cl. 365-149.000.
Kuo, Mau-Jung: *See—*
Tolbert, William R.; Feder, Joseph; and Kuo, Mau-Jung, 4,225,670, Cl. 435-41.000.
Kuppenheimer, John D., Jr.; and Murphy, Paul F., to Sanders Associates, Inc. Wide field of view-narrow band detection system. 4,225,782, Cl. 250-216.000.
Kuroki, Masataka; Kono, Sadamitsu; and Shioka, Kazuyuki, to Sogo Pharmaceutical Company, Ltd. Novel amidoxime derivatives. 4,225,721, Cl. 548-246.000.
Kurosaki Refractories Co., Ltd.: *See—*
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,225,083, Cl. 239-132.300.
Kurosaki, Shiro: *See—*
Kakuzen, Hideo; Kurosaki, Shiro; and Usui, Yuichi, 4,225,330, Cl. 65-18.000.
Kurz, Manfred: *See—*
Saur, Roland; and Kurz, Manfred, 4,225,841, Cl. 337-393.000.
Kusters, Eduard: *See—*
Kutz, Johannes, 4,224,812, Cl. 68-205.00R.
Kutik, Louis F.; and Cecil, Howard E., to Security Plastics, Inc. Continuous pumping system. 4,225,060, Cl. 222-189.000.
Kutz, Johannes, to Kusters, Eduard. Washing apparatus. 4,224,812, Cl. 68-205.00R.
Kuzma, Gyozo, to Bayerische Motoren Werke Aktiengesellschaft. Locking device for reverse gear of a motor vehicle transmission, especially for an automobile. 4,225,024, Cl. 192-53.00F.
Kvist, Arnold J. L.: *See—*
Lunden, Arnold; Heed, Bjorn; and Kvist, Arnold J. L., 4,225,656, Cl. 429-191.000.
Kyu, Shikun; and Hepworth, Edward C., to Motorola, Inc. Advanced data link controller. 4,225,919, Cl. 364-200.000.
L. & C. Steinmuller GmbH: *See—*
Dorling, Rolf, 4,225,122, Cl. 266-193.000.
Laanio, Verena: *See—*
Brechbuhler, Hans U.; Laanio, Verena; and Berrer, Dagmar, 4,225,598, Cl. 424-249.000.
Laboratoire L. Lafon: *See—*
Lafon, Louis, 4,225,617, Cl. 424-315.000.
Lachner, Hans: *See—*
Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, 4,224,843, Cl. 81-57.380.
Lachonius, Leif: *See—*
Hallerback, Stig L.; and Lachonius, Leif, 4,225,292, Cl. 417-367.000.
Lafon, Louis, to Laboratoire L. Lafon. Acetohydroxamic acids. 4,225,617, Cl. 424-315.000.
Lai, Hung C., to Fujitsu Limited. N-Bit magnitude comparator of free design. 4,225,849, Cl. 340-146.200.
Laine, Reijo, to Lapela Oy. Chain tensioner. 4,225,116, Cl. 254-247.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Faudou, Jean-Yves; Delaey, Luc; and Van de Mosselaer, Dirk, 4,225,051, Cl. 220-3.000.
Monnier, Jean-Pierre, 4,224,940, Cl. 128-205.160.
Lajotte, Dominique: *See—*
Bernard, Solange; Lajotte, Dominique; Michelon, Francois; and Sourgens, Jacques, 4,225,754, Cl. 179-81.00B.
Lakatos, Bela; Meisel nee Agoston, Julia; and Varju, Mihaly. Complexes of oligo- and polygalacturonic acids formed with essential metal ions and pharmaceutical preparations containing the same. 4,225,592, Cl. 424-180.000.
Lamica, John S.: *See—*
Harris, Robert H.; and Lamica, John S., 4,225,443, Cl. 210-510.000.
Landis, Phillip S.: *See—*
Horodysky, Andrew G.; and Landis, Phillip S., 4,225,488, Cl. 260-139.000.
Lane, Marvin M., to Sortex North America, Inc. Four color tomato grader. 4,225,242, Cl. 356-407.000.
Lane, Stephen J.: *See—*
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.
Lang, Volker. Bacteria-tight system for artificial respiration. 4,224,939, Cl. 128-205.130.
Langdon, Glen G., Jr.; and Mantey, Patrick E., to International Business Machines Corporation. Method and means for texture display in raster scanned color graphic. 4,225,861, Cl. 340-703.000.
Langenbeck, Andreas: *See—*
Breitschwerdt, Werner; and Langenbeck, Andreas, 4,225,069, Cl. 224-328.000.
Langevin, William J.: *See—*
Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., 4,225,095, Cl. 242-1.000.
Langlie, Howard; and Berg, Albert T., Jr. Hand tool with readily detachable handle. 4,224,786, Cl. 56-400.010.
Lanoue, Gerard: *See—*
Tremblay, Maurice H.; Manning, Robert E.; Lanoue, Gerard; and Gaiteri, Frank, Jr., 4,225,442, Cl. 210-497.100.
Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., to Ralston Purina Company. Feed intake limiting composition for cattle containing a saturated fatty acid. 4,225,621, Cl. 426-2.000.
Lanz, Otto: *See—*
Dandliker, Rene; Lanz, Otto; and Mottier, Francois, 4,225,241, Cl. 356-400.000.
Lapela Oy: *See—*
Laine, Reijo, 4,225,116, Cl. 254-247.000.
Larsen, Glen D., to Southern Railway Company. Cup-shaped bolster bearing. 4,224,876, Cl. 105-199.00C.
Larson, Godfrey R. Handle for mobile intravenous stand. 4,225,104, Cl. 248-125.000.
Larson, Michael E.: *See—*
Beadle, Bruce R.; Conners, John P.; and Larson, Michael E., 4,225,918, Cl. 364-200.000.
LaSalle Steel Company: *See—*
Jones, Samuel H.; and Stawarz, Dick A., 4,224,818, Cl. 72-284.000.
Lastik, Joseph P., to PPG Industries, Inc. Securing pads for sheet shipping containers. 4,225,043, Cl. 206-448.000.
Latter, Richard, to High Pressure Technology, Inc. Reliable high pressure apparatus. 4,225,300, Cl. 425-77.000.
Launay, Noel, to Societe d'Assistance Technique pour Produits Nestle S.A. Apparatus for coating frozen portions with a granulated product. 4,224,895, Cl. 118-16.000.
Laurel Bank Machine Co., Ltd.: *See—*
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,224,777, Cl. 53-641.000.
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,224,778, Cl. 53-64.000.
Lauressergues, Henri: *See—*
Tarayre, Jean-Pierre; Cousse, Henri; Mouzin, Gilbert; Lauressergues, Henri; and Casadio, Silvano, 4,225,610, Cl. 424-270.000.
Lautrou, Jean: *See—*
Tilly, Guy; Hardouin, M. Jean-Charles; and Lautrou, Jean, 4,225,577, Cl. 424-5.000.
Lavelle, Joseph A.: *See—*
Hutton, Thomas W.; and Lavelle, Joseph A., 4,225,651, Cl. 428-443.000.
Laviano, Don. Tape-severing device. 4,225,071, Cl. 225-65.000.
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., to Mobil Oil Corporation. Emulsifiable lubricant compositions. 4,225,447, Cl. 252-34.700.
Lawlor, Christopher, to Sherwin-Williams Company, The. Lock-off means for airless sprayer. 4,225,087, Cl. 239-526.000.

Lawson, Rommom L. Process for separation and collection of viable female and male spermatozoa. 4,225,405, Cl. 204-180.00R.

Layciak, Stephen G.: *See*—
Johnston, Robert J.; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,225,765, Cl. 200-307.000.

Learn, Richard L., to Emhart Industries, Inc. Circuit means for providing multiple audible signals from an audible tone generator means. 4,225,856, Cl. 340-384.00E.

LeBegue, Maurice K., to National Mine Service Company. Continuous mining machine and cutter drum drive therefor. 4,225,189, Cl. 299-71.000.

Lechner, Uwe: *See*—
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,225,619, Cl. 424-331.000.

Leconte, Gilles: *See*—
Lefeuvre, Andre; Leconte, Gilles; and Chiapello, Michel, 4,224,907, Cl. 123-352.000.

Lectrolarm Custom Systems, Inc.: *See*—
Smith, William V., 4,225,886, Cl. 358-210.000.

Lederer, Wolfgang: *See*—
Kagerhuber, Franz; and Lederer, Wolfgang, 4,224,852, Cl. 83-319.000.

Ledermann GmbH & Co.: *See*—
Katz, Otto, 4,225,274, Cl. 408-225.000.

Lee, Goh H. Rotary engine with arcuate sealing vanes. 4,225,293, Cl. 418-94.000.

Lee, Hua-Tung: *See*—
Councill, Edwin D.; Kelly, H. Janet; and Lee, Hua-Tung, 4,225,947, Cl. 365-238.000.

Lee, Norman J., to Matburn (Holdings) Limited. Operation table. 4,225,125, Cl. 269-322.000.

Lee, Norman J., to Matburn (Holdings) Limited. Surgical operation tables. 4,225,126, Cl. 269-322.000.

Lee, Ta-jyh: *See*—
Cragoe, Edward J., Jr.; Lee, Ta-jyh; and Bicking, John B., 4,225,609, Cl. 424-270.000.

Lee, William S.: *See*—
Kinzler, Jack A.; Heffernan, James T.; Fehrenkamp, Leroy G.; and Lee, William S., 4,225,372, Cl. 156-154.000.

Lefeuvre, Andre; Leconte, Gilles; and Chiapello, Michel, to Regie Nationale des Usines Renault. Method for regulation of the speed of an internal combustion engine and limiter system making use of it. 4,224,907, Cl. 123-352.000.

Le Gardeur, Rene, to Commissariat a l'Energie Atomique. Generator of meter- or decimeter-long waves. 4,225,806, Cl. 315-5.000.

Le Goff epouse Henaff, Jeannine: *See*—
Feldmann, Michel; and Le Goff epouse Henaff, Jeannine, 4,225,855, Cl. 340-347.0AD.

Leigh, Arthur G., to Lever Brothers Company. Bleaching and cleaning composition. 4,225,452, Cl. 252-102.000.

Leiken, Susan: *See*—
Archambault, Larry J., 4,225,132, Cl. 272-137.000.

Lemay, Richard A.: *See*—
Hartley, Henry F.; Lemay, Richard A.; Terakawa, Kiyoshi H.; and Woods, William E., 4,225,921, Cl. 364-200.000.

LeMert, Alfred J.: *See*—
Mikosz, Daniel S.; and LeMert, Alfred J., 4,224,722, Cl. 24-234.000.

Lemons, Ross A.: *See*—
Boyd, Gary D.; Lemons, Ross A.; Phillips, James C.; Remeika, Joseph P.; and Spencer, Edward G., 4,225,216, Cl. 350-357.000.

Lengyel, Ladislaus S.: *See*—
Kaplan, Stephen J.; and Lengyel, Ladislaus S., 4,224,958, Cl. 137-340.000.

Le Roux, Edouard, to Societe d'Appareillage Electrique Saparel. Electro-magnetic relay with first and second spring biasing means. 4,225,838, Cl. 335-274.000.

LeRoy, Rodney L.; Hammerli, Martin; and Butler, John P., to Noranda Mines Limited; and Electrolyser Corporation Ltd., The. Method for heavy-water extraction from non-electrolytic hydrogen streams using a combined electrolysis and catalytic exchange system. 4,225,402, Cl. 204-129.000.

Les Cables de Lyon: *See*—
Comte, Georges, 4,225,833, Cl. 333-242.000.
Pierre, Bernard; Eyraud, Ivan; and Gaubert, Jean, 4,225,749, Cl. 174-107.000.

Lesche, Wolfgang, to Siemens Aktiengesellschaft. Function generator with storage matrix. 4,225,936, Cl. 364-718.000.

Lesher, George Y.; and Opalka, Chester J., Jr., to Sterling Drug Inc. 3-Hydroxy or hydroxymethyl-5-(4-pyridinyl)2(1H)-pyridinones, useful as cardiotonic agents and their preparation. 4,225,601, Cl. 424-263.000.

Lesher, George Y.; and Opalka, Chester J., Jr., to Sterling Drug Inc. Preparation of 3-amino(or carbamyl)-5-(pyridinyl)-2(1H)-pyridinones. 4,225,715, Cl. 546-257.000.

Leveque, Alain, to Rhone-Poulenc Industries. Process for the purification of an impure phosphoric acid. 4,225,568, Cl. 423-321.00S.

Lever Brothers Company: *See*—
Leigh, Arthur G., 4,225,452, Cl. 252-102.000.

Levine, Arnold M., to International Telephone and Telegraph Corporation. Automatic failure-resistant radar transmitter. 4,225,866, Cl. 343-17.700.

Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,225,337, Cl. 71-93.000.

Lewandowski, Joseph T.: *See*—
Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,225,469, Cl. 252-518.000.

Lewin, Helmut: *See*—
Schoettle, Klaus; Lewin, Helmut; Hoffmann, Werner; Dobler, Peter; and Gliniorz, Lothar, 4,225,099, Cl. 242-192.000.

Lewin, Seymour Z., to United States of America, Navy. Chemical agent detection method and apparatus. 4,225,316, Cl. 23-230.300.

Lewis, David M.; and Cockett, Keith R. F., to I.W.S. Nominee Company Limited. Treatment of textiles. 4,225,312, Cl. 8-115.600.

Lewis, Frank D. Marine depth sounding apparatus. 4,225,952, Cl. 367-112.000.

Lewis, Owen; Refermat, Stanley; and Almquist, Thomas A., to University of Rochester, The. Laser apparatus. 4,225,826, Cl. 330-4.300.

Li, Chien C.: *See*—
Stiel, Leonard I.; and Li, Chien C., 4,224,796, Cl. 60-651.000.

Libke, Albert W., to General Signal Corporation. Butterfly valve with a retaining ring. 4,225,112, Cl. 251-214.000.

Libke, Albert W.: *See*—
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., 4,225,113, Cl. 251-306.000.
Barthelemy, Paul J.; Clausing, Dale R.; Libke, Albert W.; and Trott, Donald R., 4,225,114, Cl. 251-308.000.

Liebermann, Benno E. Apparatus for transferring heat to food articles. 4,224,862, Cl. 99-331.000.

Liedtke, Kurt: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,225,040, Cl. 206-245.000.

Liermann, Peter: *See*—
Weise, Lutz; and Liermann, Peter, 4,225,195, Cl. 303-106.000.

Lilley, George L., to Armstrong Cork Company. Reticulated polyvinyl chloride plastisol foams. 4,225,643, Cl. 428-207.000.

Lillington, John, to Plessey Handel und Investments AG. Radar signal processors. 4,225,864, Cl. 343-7.700.

Limongi, Eric: *See*—
Biola, Georges; Komorn, Yves; and Limongi, Eric, 4,225,516, Cl. 568-41.000.

Lind, Hans S. H.; and Orevik, Sune A. W., to Telefonaktiebolaget L M Ericsson. Method and apparatus for the charging and supervision of a battery. 4,225,815, Cl. 320-39.000.

Linder, Bill. Fog filter for headlights. 4,225,904, Cl. 362-61.000.

Linge, Herbert: *See*—
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.

Lingle, Harrison C., to Hartco Company. Method of and apparatus for applying pronged sheet metal spring anchoring clips to furniture rails. 4,224,731, Cl. 29-432.000.

Lipe-Rollway Corporation: *See*—
Wishart, George L., 4,225,028, Cl. 192-111.00A.

Lipinski, Richard D.: *See*—
Jaramillo, Giovanni; Teitzman, Melvin; and Lipinski, Richard D., 4,225,970, Cl. 455-89.000.

Lipp, Ellis P.; and Petre, Mark L., to Emhart Industries, Inc. Adjustable variable resistance control system. 4,225,844, Cl. 338-135.000.

Lipp, Ellis P., to Emhart Industries, Inc. Shaft locking mechanism having combination switch and variable resistor. 4,225,846, Cl. 338-198.000.

Lippert, Charles G.: *See*—
Meyer, Robert W.; and Lippert, Charles G., 4,225,121, Cl. 266-130.000.

Lipshield, Eugene C., to Orscheln Lever Sales Co. Tilt-cab locking device including interlock means. 4,225,004, Cl. 180-89.140.

Litt, Kenneth C.; and Vella, Alexander J., to Pace Incorporated. Desolderer and heater assembly for use therewith. 4,225,076, Cl. 228-20.000.

Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., to Petro-Canada Exploration Inc.; Her Majesty the Queen in right of the Province of Alberta, Government of the Province of Alberta, Department of Energy and Natural Resources, Alberta Syncrude Equity; Ontario Energy Corporation; Imperial Oil Limited; Canada-Cities Service, Ltd.; and Gulf Oil Canada Limited. Filtration of hot water extraction process whole tailings. 4,225,433, Cl. 210-702.000.

Lloyd, Robert; and Turner, Maxwell J., to Energy Recycling Corporation Pty. Ltd. Method of manufacturing a container. 4,224,732, Cl. 29-463.000.

Lock, Melvin N.; and Chiappetta, Achille F., to Albert M. Lock & Son, Inc. Knock-down rockers and the like. 4,225,181, Cl. 297-258.000.

Locke, Charles D.: *See*—
Comberiati, Joseph R.; Locke, Charles D.; and Kamath, Krishna I., 4,224,992, Cl. 166-273.000.

Locker, David J.; and Daubendiek, Richard L., to Eastman Kodak Company. Silver halide precipitation and methine dye spectral sensitization process and products thereof. 4,225,666, Cl. 430-569.000.

Loeffler, Herbert H., to Woodstream Corporation. Animal trap. 4,224,756, Cl. 43-90.000.

Login, Robert B., to BASF Wyandotte Corporation. Graft polyesters and sized textiles. 4,225,681, Cl. 525-30.000.

Lohn, Gerd, to Kaltenbach & Voigt GmbH & Co. Pneumatic laminar motor for dental use. 4,225,308, Cl. 433-132.000.

Lohrmann, Dieter R., to United States of America, Army. Multislot bicone antenna. 4,225,869, Cl. 343-773.000.

Loiselle, Guy J. Cleaner for a playing head of a cassette player. 4,225,893, Cl. 360-128.000.

Long, E. Shirley: *See*—
Waters, Ronald L.; Grady, Thomas J.; Brown, Thomas F.; and Long, E. Shirley, 4,225,852, Cl. 340-286.00R.

Longo, John M.: *See*—
Horowitz, Harold S.; Longo, John M.; and Lewandowski, Joseph T., 4,225,469, Cl. 252-518.000.

Loo, Bock H.: *See—*
Wolfe, James F.; and Loo, Bock H., 4,225,700, Cl. 528-337.000.

Looschen, Floyd W., to Burroughs Corporation. High speed, low noise digital data communication system. 4,225,752, Cl. 370-1.000.

Lord, Joseph S.: *See—*
Dostoomian, Ashod S.; and Lord, Joseph S., 4,225,230, Cl. 356-45.000.

L'Oreal: *See—*
Bore, Pierre; and Tourenq, Lucienne, 4,224,950, Cl. 128-759.000.

Lorenzini, Robert A. Dual-hinged case. 4,225,041, Cl. 206-314.000.

Loser, Karlheinz, to Weisert, Loser & Sohn GmbH & Co. Device for detection of metal in a moved strand. 4,224,849, Cl. 83-80.000.

Lothman, Stig A.; and Fuchs, Alfred, to Tetra Pak International AB. Method and apparatus for the sterilizing of a packing material web. 4,225,556, Cl. 422-28.000.

Lowery, Michael B. Vehicles. 4,225,147, Cl. 280-87.010.

LRS Research Ltd.: *See—*
Taylor, Lauren P.; and Petroski, Alex, 4,224,821, Cl. 73-32.00R.

Luber, Edward J., Jr.: *See—*
Warner, Paul L., Jr.; and Luber, Edward J., Jr., 4,225,724, Cl. 548-346.000.

Lucas Industries Limited: *See—*
Mowbray, Dorian F., 4,224,903, Cl. 123-300.000.

Luce, Dan G., to Tideland Signal Corporation. Lampchanger for a light. 4,225,901, Cl. 362-20.000.

Ludwig, Guy: *See—*
Teichmann, Paul; Beneke, Wolfgang; Cremer, Heinrich; and Ludwig, Guy, 4,224,717, Cl. 19-98.000.

Ludwig Industries: *See—*
Mikosz, Daniel S.; and LeMert, Alfred J., 4,224,722, Cl. 24-234.000.

Luftechnik Bayreuth Ruskamp GmbH: *See—*
Sgaslik, Friedrich; and Nalaskowski, Detlef, 4,225,327, Cl. 55-324.000.

Lumpp, Robert E.: *See—*
Hodge, Malcolm H.; Lumpp, Robert E.; and Margolin, Mark, 4,225,214, Cl. 350-96.210.

Lunden, Arnold; Heed, Bjorn; and Kvist, Arnold J. L. Solid electrolyte for electromechanical cells and method for the production thereof. 4,225,656, Cl. 429-191.000.

Lunkwitz, Klaus: *See—*
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.

Lupinek, Vladimir: *See—*
Hebky, Jaromir; Lupinek, Vladimir; Sova, Milan; Sevcik, Bohumil; and Broz, Jiri, 4,225,604, Cl. 424-250.000.

Lux, Peter; and Petzold, Jurgen, to U.S. Philips Corporation. Method and apparatus for adaptive transform coding of picture signals. 4,225,885, Cl. 340-146.3AG.

Lynn, Charles C., to Ben Hill Griffin, Inc. Citrus fiber additive product and process for making same. 4,225,628, Cl. 426-549.000.

Lynos, Inc.: *See—*
Coone, Malcolm G., 4,225,264, Cl. 403-337.000.

Lyons, James E.; Suld, George; and Shinn, Robert W., to Suntech, Inc. Catalytic process for the conversion of ethyl benzene to equimolar amounts of vinyl acetate and phenol. 4,225,728, Cl. 560-261.000.

Maag Gear Wheel & Machine Company: *See—*
Haupt, Fritz, 4,225,296, Cl. 418-206.000.

Machino, Katsuyuki: *See—*
Ise, Masahiro; Inazaki, Kenzo; Machino, Katsuyuki; and Suzuki, Chuji, 4,225,807, Cl. 315-169.300.

Machlett Laboratories, Inc., The: *See—*
Shapiro, Jonathan S.; and Holland, William P., 4,225,787, Cl. 250-406.000.

Macourt, Denis J. C. Chemical analysis and mineral prospecting. 4,225,314, Cl. 23-230.0EP.

MacPherson, John A.: *See—*
Adee, James M.; and MacPherson, John A., 4,225,345, Cl. 75-211.000.

Maegawa, Masaaki: *See—*
Takenaka, Tukashi; Maegawa, Masaaki; and Nakanishi, Tosaku, 4,225,890, Cl. 360-72.100.

Magera, Matthias R. Refractory insulation for skid pipes and the like in reheating furnaces. 4,225,307, Cl. 432-234.000.

Magewick, Aloysius F.; and Magewick, Elaine M. Precision glass cutter. 4,224,738, Cl. 30-164.950.

Magewick, Elaine M.: *See—*
Magewick, Aloysius F.; and Magewick, Elaine M., 4,224,738, Cl. 30-164.950.

Magnaghi, Adriano, to Emerson Electric Co. Means for holding the end turns of electric motor stator windings. 4,225,800, Cl. 310-260.000.

Magyar Aluminiumipari Troszt: *See—*
Matyasi, Jozsef; Kokeny, Bela; Zsembery, Laszlo; Kaptay, Gyorgy; and Nemeth, Sandor, 4,225,639, Cl. 427-372.200.

Maier, Siegfried, to Caterpillar Tractor Co. Additive for dehumidifying plaster. 4,225,358, Cl. 106-90.000.

Makhobey, Walter. Flush tank valve closer. 4,224,703, Cl. 4-324.000.

Makino, Daisuke; Miyadera, Yasuo; Harada, Seiki; and Saiki, Atsushi, to Hitachi Chemical Company, Ltd. Method of preparing polyamide acid type intermediates for processing of semiconductors. 4,225,702, Cl. 528-353.000.

Makino, Hajime; Shinoda, Wataru; and Yamamura, Kazuhiro, to Toda Kogyo Corp. Anti-corrosive pigment and anti-corrosive aqueous paint. 4,225,352, Cl. 106-14.210.

Makino, Tomoatsu; Hirano, Yoshio; and Miwa, Katsuteru, to Nippondenso Co., Ltd. Frequency-to-current conversion circuit. 4,225,796, Cl. 307-261.000.

Malacheski, Joseph J.; and Zenda, Richard J. Sheet cutting and scoring device and method. 4,224,854, Cl. 83-745.000.

Malerbi, Bernard W.: *See—*
Hydes, Paul C.; and Malerbi, Bernard W., 4,225,529, Cl. 260-429.00R.

Mallinckrodt, Inc.: *See—*
Hoey, George B., 4,225,725, Cl. 560-37.000.

Mallory, William R.: *See—*
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,225,710, Cl. 544-236.000.

Manders, Petrus G. J., to Ruti-Te Strake B.V. Device for watching the flowing condition of a gas in a conduit. 4,224,827, Cl. 73-861.650.

Manfredi, Pierre: *See—*
Ducos, Maurice; Manfredi, Pierre; Petel, Maurice; and Portal, Guy, 4,225,785, Cl. 250-336.000.

Manning, Robert E.: *See—*
Tremblay, Maurice H.; Manning, Robert E.; Lanoue, Gerard; and Gaiteri, Frank, Jr., 4,225,442, Cl. 210-497.100.

Mantegani, Enzo, to Welko Industriale S.p.A. Insulation structure for kiln rollers and element for use therewith. 4,225,197, Cl. 308-37.000.

Mantey, Patrick E.: *See—*
Langdon, Glen G., Jr.; and Mantey, Patrick E., 4,225,861, Cl. 340-703.000.

Manufacture de Produits Chimiques Protex S.A.: *See—*
Joseph, Christian M., 4,225,361, Cl. 106-111.000.

Manufacture Metallurgique de Tournus: *See—*
Klein, Dominique, 4,224,978, Cl. 164-86.000.

Mao, Chung-Ling; and Nudenberg, Walter, to Uniroyal, Inc. Flame-retardant polyurethane compositions. 4,225,645, Cl. 428-290.000.

Marancik, William G.: *See—*
Young, Morris S.; and Marancik, William G., 4,224,735, Cl. 29-599.000.

Marchand, Nathan: *See—*
Marner, Gene R.; and Marchand, Nathan, 4,225,870, Cl. 343-854.000.

Marcus, Sanford M.: *See—*
Donohue, Paul C.; and Marcus, Sanford M., 4,225,468, Cl. 252-509.000.

Marenco, Gerard: *See—*
Brunet, Roger; and Marenco, Gerard, 4,225,280, Cl. 414-479.000.

Margerum, J. David: *See—*
Yamagishi, Frederick G.; Miller, Leroy J.; Jensen, John E.; and Margerum, J. David, 4,225,454, Cl. 252-299.000.

Margolin, Mark: *See—*
Hodge, Malcolm H.; Lumpp, Robert E.; and Margolin, Mark, 4,225,214, Cl. 350-96.210.

Marhofer, Gerd: *See—*
Buck, Robert; and Marhofer, Gerd, 4,225,748, Cl. 174-52.00R.

Marhold, Albrecht; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for the preparation of trifluoromethylphenols. 4,225,731, Cl. 568-775.000.

Mariani, Giulio. Floating apparatus for the remote marking of the position of bodies fallen in water. 4,224,707, Cl. 9-8.00R.

Marinoff, George, to Mead Corporation, The. Ink jet printer. 4,225,872, Cl. 346-75.000.

Marks, Jeffrey C.: *See—*
Taute, Mark A.; Treichel, Richard; Marks, Jeffrey C.; and Mattson, Timothy J., 4,225,151, Cl. 280-661.000.

Marner, Gene R.; and Marchand, Nathan, to United States of America, Army. Null steering antenna. 4,225,870, Cl. 343-854.000.

Marquardt, Bruno. Flexible connection for cable wire rope ends. 4,225,172, Cl. 294-74.000.

Marsden, Dennis B., to Pullman Incorporated. Hopper car door locking mechanism. 4,224,878, Cl. 105-253.000.

Marshall, Rick: *See—*
Scott, Norman R.; and Marshall, Rick, 4,224,949, Cl. 128-734.000.

Martin, David G., to Upjohn Company, The. Purification of AT-125. 4,225,720, Cl. 548-240.000.

Martin, Henry, to Ciba-Geigy Corporation. Phenylglyoxylonitrile-2-oxime-cyanomethyl ether as a crop safener. 4,225,334, Cl. 71-88.000.

Martin, Johannes J. Charging device for furnaces. 4,225,277, Cl. 414-198.000.

Martin, John R.: *See—*
Block, Robert S.; and Martin, John R., 4,225,884, Cl. 358-122.000.

Martincic, Paul W., to Westinghouse Electric Corp. Current transformer. 4,225,839, Cl. 336-96.000.

Martinelli, Ramon U., to RCA Corporation. Semiconductor device having integrated diode. 4,225,874, Cl. 357-13.000.

Martinet, Roland: *See—*
Darves, Maurice; and Martinet, Roland, 4,224,957, Cl. 137-270.000.

Martinez, Ruben C. Cable retrieving tool. 4,225,173, Cl. 294-86.100.

Martonffy, Stephen. Carbonating device. 4,225,537, Cl. 261-70.000.

Marukawa, Katsukiyo; Okamoto, Setsuo; Yamada, Kazunari; and Iba, Masahisa, to Tokuyama Soda Company Limited; and Sumitomo Metal Industries Limited. Process for treating waste slags. 4,225,565, Cl. 423-208.000.

Marumoto, Ryuji; Tanabe, Masao; and Furukawa, Yoshiyasu, to Takeda Chemical Industries, Ltd. 2,6-Diaminonebularines. 4,225,591, Cl. 424-180.000.

Marx, Dieter: *See—*
Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.

Marx, Thomas O., to Atwood Vacuum Machine Company. Ball socket assembly with resilient locking key. 4,225,261, Cl. 403-122.000.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Bauer, Friedrich, 4,224,835, Cl. 74-574.000.

Mascioli, Rocco L.: *See*—
DePaul, Harry V.; Fondots, David C.; Mascioli, Rocco L.; and Panchak, John R., 4,225,453, Cl. 252-182.000.

Masek, Jaroslav; and Suter, Franz, to BBC Brown Boveri & Company Limited. Safety system for a steam turbine installation. 4,225,284, Cl. 415-16.000.

Maskasky, Joe E., to Eastman Kodak Company. Ultrasonic imaging with catalytic elements. 4,225,658, Cl. 430-3.000.

Maskwa, Alvin: *See*—
Trevoy, Lloyd; and Maskwa, Alvin, 4,225,422, Cl. 209-2.000.

Masters, Harvey M., to Westinghouse Electric Corp. Automatic synchronizing system for digital asynchronous communications. 4,225,960, Cl. 371-47.000.

Masuda, Eiji; Tanaka, Teruaki; Yamaguchi, Tetsuo; and Suzuki, Hiroaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Display circuit. 4,225,847, Cl. 340-802.000.

Matburn (Holdings) Limited: *See*—
Lee, Norman J., 4,225,125, Cl. 269-322.000.
Lee, Norman J., 4,225,126, Cl. 269-322.000.

Matix AG: *See*—
Schwarz, Eric, 4,225,244, Cl. 356-434.000.

Matsuda, Hiroshi: *See*—
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.

Matsuda, Tsutomu; Rimoto, Masanori; and Hayashi, Chihiro, to Ricoh Company, Ltd. Diazo copying material. 4,225,662, Cl. 430-173.000.

Matsui, Atsushi. Funnel-shaped structural block and assemblies of such blocks for shore protection. 4,225,269, Cl. 405-33.000.

Matsui, Hironori; and Ito, Takashi, to Kanebo Ltd. Carbon-carbon composite material and method for its production. 4,225,569, Cl. 423-445.000.

Matsumoto, Junichiro: *See*—
Sugasawa, Fukashi; Iizuka, Haruhiko; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,224,920, Cl. 123-198.00F.

Matsunaga, Isao: *See*—
Ochi, Kiyoshige; Matsunaga, Isao; Shindo, Minoru; and Kaneko, Chikara, 4,225,524, Cl. 260-397.200.

Matsuno, Tadahiko: *See*—
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,225,083, Cl. 239-132.300.

Matsuoka, Kikuo: *See*—
Hirota, Kazumi; and Matsuoka, Kikuo, 4,225,553, Cl. 264-292.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kawabuchi, Masami; Sato, Jun-ichi; Nagai, Kiyotaka; Fukukita, Hiroshi; and Fukumoto, Akira, 4,224,829, Cl. 73-626.000.
Watanabe, Masahiro; and Haruki, Hiroshi, 4,225,828, Cl. 331-1.00A.
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,225,889, Cl. 360-14.000.

Mattel, Inc.: *See*—
Kelley, William J., 4,224,757, Cl. 46-1.00R.
Saint-Pierre, Raymond M.; and Danielsen, Berne E., 4,224,759, Cl. 46-105.000.

Matter, Frank A.; and Brunner, Hans E., to Microprocess Ltd. Annular grinding mill. 4,225,092, Cl. 241-46.00B.

Mattson, Timothy J.: *See*—
Taute, Mark A.; Treichel, Richard; Marks, Jeffrey C.; and Mattson, Timothy J., 4,225,151, Cl. 280-661.000.

Matyasi, Jozsef; Kokeny, Bela; Zsembery, Laszlo; Kaptay, Gyorgy; and Nemeth, Sandor, to Magyar Aluminiumipari Troszt. Process for preparing alumina being suitable for layer chromatography. 4,225,639, Cl. 427-372.200.

Maurer Engineering Inc.: *See*—
Dareing, Donald W., 4,225,270, Cl. 405-168.000.
Maurer, William C., 4,225,000, Cl. 175-107.000.

Maurer, Fritz; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating insects and acarids with O-alkyl-O-[2-substituted-6-alkoxy-pyrimidin(4)yl]-thionophosphonic acid esters. 4,225,594, Cl. 424-200.000.

Maurer, William C., to Maurer Engineering Inc. Down hole drilling motor with pressure balanced bearing seals. 4,225,000, Cl. 175-107.000.

Mazur, John T., to Harris Corporation. Low-profile X-Y antenna pedestal utilizing multi-hinge points to provide angular motion for each axis. 4,225,868, Cl. 343-765.000.

MCA Disco-Vision, Inc.: *See*—
Winslow, John S., 4,225,873, Cl. 346-76.00L.

McBride, Lyle E., Jr.; and Delagi, Richard G., to Texas Instruments Incorporated. Connector apparatus. 4,225,213, Cl. 350-96.200.

McCarty, Stuart W.: *See*—
Cline, Warren K.; McCarty, Stuart W.; and Owens, William F., Jr., 4,225,636, Cl. 427-243.000.

McCaslin, Robert E. Radio controlled toy vehicle. 4,224,762, Cl. 46-256.000.

McCollum, Anthony W.: *See*—
Morris, Don L.; and McCollum, Anthony W., 4,225,726, Cl. 560-238.000.

McCooey, Catherine: *See*—
Huang, I-Der; and McCooey, Catherine, 4,225,458, Cl. 252-413.000.

McCormick, Charles L. Pesticide-polymer systems prepared from vinyl monomers. 4,225,693, Cl. 526-261.000.

McCormick, Wayne: *See*—
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.

McCrudden, Joseph E.; and Smith, Alan, to Interox Chemicals Limited. Bleaching composition. 4,225,451, Cl. 252-99.000.

McDaniels, John D., Jr.: *See*—
Thurston, Glenn C.; McDaniels, John D., Jr.; and Gertsch, Paul R., 4,224,983, Cl. 165-158.000.

McDonnell Douglas Corporation: *See*—
Baldwin, Floyd G.; and McIntire, Kenneth D., 4,225,259, Cl. 403-62.000.

McGuire, Robert C.; Selder, Albertus G.; and Hutchison, Mark A., to Dresser Industries, Inc. Apparatus for removing and collecting moisture from a moisture-laden air flow. 4,225,188, Cl. 299-64.000.

McIntire, Kenneth D.: *See*—
Baldwin, Floyd G.; and McIntire, Kenneth D., 4,225,259, Cl. 403-62.000.

McLaughlin, Robert M. Multi-section fence. 4,225,120, Cl. 256-24.000.

McLoughlin, John; Athanasiades, Neocles; and Rotblum, Yehuda, to McLoughlin, John. Flow measuring means. 4,224,826, Cl. 73-198.000.

McMurry, John E., to University of California, The Regents of the. Process for producing symmetrical olefins. 4,225,734, Cl. 585-351.000.

McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., to Carborundum Company, The. Neutron absorbing article and method for manufacture of such article. 4,225,467, Cl. 252-478.000.

McNeil Corporation: *See*—
Rosin, George C.; and Kulon, Robert E., 4,224,979, Cl. 164-130.000.

McPherson, Hugh, to Ferranti Limited. Gain-controlled amplifier circuits. 4,225,865, Cl. 343-16.00M.

McReynolds, Kent B., to Dow Chemical Company, The. Highly filled sheets and method of preparation thereof. 4,225,383, Cl. 162-156.000.

Mead Corporation, The: *See*—
Allan, David R., 4,225,549, Cl. 264-234.000.
Marinoff, George, 4,225,872, Cl. 346-75.000.

Meakin, Brian C., to Fisons Limited. Compositions and methods for treating certain skin conditions. 4,225,600, Cl. 424-258.000.

Means, Rodney J.: *See*—
Hepworth, Edward C.; and Means, Rodney J., 4,225,917, Cl. 364-200.000.

Measurex Corporation: *See*—
Typpo, Pekka M., 4,225,243, Cl. 356-409.000.

Mechanical Technology Incorporated: *See*—
Gray, Stanley, 4,225,196, Cl. 308-9.000.

Medem, Harald; Freitag, Dieter; Hespe, Hans; and Heynemann, Carl, to Bayer Aktiengesellschaft. Optical components consisting of aromatic polyesters molded in the form of an optical lens. 4,225,698, Cl. 528-176.000.

Medtronic, Inc.: *See*—
Koop, Nicholas S.; and Morrissey, William J., 4,225,262, Cl. 403-272.000.

Medwin, Herman, to United States of America, Navy. Acoustical deverberator. 4,225,954, Cl. 367-118.000.

Mego Corp.: *See*—
Birdsall, John; and Fauls, Thomas, 4,224,760, Cl. 46-116.000.

Meier, Willi, to Dorina Nahmaschinen GmbH. Sewing machine with fabric-supporting arm and add-on table. 4,224,887, Cl. 112-260.000.

Meiji Seika Kaisha Ltd.: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.

Meisel nee Agoston, Julia: *See*—
Lakatos, Bela; Meisel nee Agoston, Julia; and Varju, Mihaly, 4,225,592, Cl. 424-180.000.

Meisner, Alfred; and Arnold, Werner F., to DIEHL, Firma. Electronic digital time display apparatus. 4,225,776, Cl. 219-492.000.

Meisterheim, Richard A.: *See*—
Hubbard, S. Eugene; and Meisterheim, Richard A., 4,225,163, Cl. 292-21.000.

Melnick, Joseph L.; and Wallis, Craig. Staining and analysis of bacteria. 4,225,669, Cl. 435-29.000.

Menin, Albert S.; and Fife, Merrill E., to Bendix Corporation, The. Fish counter with scanning transducer. 4,225,951, Cl. 367-105.000.

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Whitchurch, Raymond, 4,224,748, Cl. 36-24.500.

Mercer, Elizabeth A.; and Eisele, John F., to Minnesota Mining and Manufacturing Company. Transparent sheet material. 4,225,652, Cl. 428-515.000.

Merck & Co., Inc.: *See*—
Cragoe, Edward J., Jr.; Lee, Ta-jyh; and Bicking, John B., 4,225,609, Cl. 424-270.000.
Jones, Howard; and Houser, Robert W., 4,225,730, Cl. 562-469.000.

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.
Unger, Klaus; and Gotz, Heinz, 4,225,463, Cl. 252-445.000.

Mergel, Jurgen: *See*—
Divisek, Jiri; and Mergel, Jurgen, 4,225,401, Cl. 204-129.000.

Merk, Walter: *See—*
Brickl, Rolf; Eberhardt, Hans; Appel, Karl-Richard; Lechner, Uwe; and Merk, Walter, 4,225,619, Cl. 424-331.000.
Mesne Koh-I-Noor Rapidograph, Inc.: *See—*
Wassmann, Edgar, 4,225,548, Cl. 264-130.000.
Messenger, John D.: *See—*
Rayner, Adrien P.; Messenger, John D.; and Green, James T., 4,225,045, Cl. 206-508.000.
Messer, Gordon J., to United Technologies Corporation. Control for an auxiliary commutation circuit. 4,225,912, Cl. 363-57.000.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Sowa, Armin; and Munding, German, 4,224,991, Cl. 166-272.000.
Wendt, Hans J., 4,225,926, Cl. 364-463.000.
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Rayner, Adrien P.; Messenger, John D.; and Green, James T., 4,225,045, Cl. 206-508.000.
Metelnick, John A. Bag protector for leg cast. 4,224,935, Cl. 128-82.000.
Meyer, Robert W.; and Lippert, Charles G., to Holcroft. Energy efficient heat-treating furnace system. 4,225,121, Cl. 266-130.000.
Meyerhoefer, Carl E.; and Meyerhoefer, Carl H., to Revlon, Inc. Sheath for temperature sensing unit. 4,224,955, Cl. 132-33.00R.
Meyerhoefer, Carl H.: *See—*
Meyerhoefer, Carl E.; and Meyerhoefer, Carl H., 4,224,955, Cl. 132-33.00R.
Meyr, Heinrich; and Georges, Claude, to Hasler AG Bern. Mosaic printer. 4,225,962, Cl. 375-2.000.
Michael, Thomas H., to Deere & Company. Endless belt conveyor. 4,225,036, Cl. 198-840.000.
Michelon, Francois: *See—*
Bernard, Solange; Lajotte, Dominique; Michelon, Francois; and Sourgens, Jacques, 4,225,754, Cl. 179-81.00B.
Microprocess Ltd.: *See—*
Matter, Frank A.; and Brunner, Hans E., 4,225,092, Cl. 241-46.00B.
Midrex Corporation: *See—*
Beggs, Donald; and Scarlett, John C., 4,225,340, Cl. 75-35.000.
Mikosz, Daniel S.; and LeMert, Alfred J., to Ludwig Industries. Swivel hook assembly. 4,224,722, Cl. 24-234.000.
Mikulas, Budai. Screen printing machine. 4,224,870, Cl. 101-123.000.
Mikulicz, Michael Z.; and Himes, James F., to UOP Inc. Alkylation process. 4,225,737, Cl. 585-449.000.
Miles Laboratories, Inc.: *See—*
Buckler, Robert T.; and Schroeder, Hartmut R., 4,225,485, Cl. 260-112.00B.
Denning, Charles E.; and Schick, Lloyd A., 4,225,576, Cl. 424-1.000.
Miles, Steven W.; and Emerald, Paul R., to Sprague Electric Company. Integrated circuit with C-Mos logic, and a bipolar driver with polysilicon resistors. 4,225,877, Cl. 357-41.000.
Milicevic, Branimir: *See—*
Kangle, Purushottam J.; and Milicevic, Branimir, 4,225,313, Cl. 8-474.000.
Milici, Richard C.: *See—*
Dantzig, Jonathan A.; Tyler, Derek E.; and Milici, Richard C., 4,225,544, Cl. 264-43.000.
Miller, Don R., to U-Brand Corporation. Gate valve. 4,225,115, Cl. 251-327.000.
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., to Rohm and Haas Company. Process for the preparation of substituted arylcyanoalkyl and diaryl cyanoalkylimidazoles. 4,225,723, Cl. 548-341.000.
Miller, Jimmy L.; and Schnell, William J., to Baxter Travenol Laboratories, Inc. Support member for use with semipermeable membrane. 4,225,438, Cl. 210-321.00B.
Miller, Leroy J.: *See—*
Yamagishi, Frederick G.; Miller, Leroy J.; Jensen, John E.; and Margerum, J. David, 4,225,454, Cl. 252-299.000.
Miller, Robert C.: *See—*
Justice, James W. H.; Kennedy, Paul G.; and Miller, Robert C., 4,225,771, Cl. 219-137.00R.
Miller, Robert J.: *See—*
Bier, Kenneth C.; and Miller, Robert J., 4,224,908, Cl. 123-438.000.
Miller, Timothy C.: *See—*
Palin, William J.; and Miller, Timothy C., 4,225,783, Cl. 250-302.000.
Milliken Research Corporation: *See—*
Shortte, Willard H., Jr., 4,224,884, Cl. 112-79.00R.
Millner, Ozra E., Jr.: *See—*
Alaimo, Robert J.; and Millner, Ozra E., Jr., 4,225,526, Cl. 260-397.70R.
Mills, Stuart D.: *See—*
Johnson, Malcolm; Mills, Stuart D.; and Phillips, Paul J., 4,225,602, Cl. 424-263.000.
Minagawa, Motonobu; Nakahara, Yutaka; and Takahashi, Masayuki, to Argus Chemical Corp. Organophosphonate coester stabilizers. 4,225,474, Cl. 260-23.0XA.
Minck, Klaus-Otto: *See—*
Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.
Minnesota Mining and Manufacturing Company: *See—*
Anthone, Leo E.; and Berglund, Sidney J., 4,225,042, Cl. 206-332.000.
Ball, Alan, 4,225,663, Cl. 430-303.000.
Mercer, Elizabeth A.; and Eisele, John F., 4,225,652, Cl. 428-515.000.
Newell, Richard G., 4,225,460, Cl. 252-429.00R.
Wall, Thomas H.; and Johnson, Kevin T., 4,225,542, Cl. 261-142.000.
Mino, Masao, to Kabushiki Kaisha Mino Seisakusho. Grooved traverse drum for use in drum winder. 4,225,096, Cl. 242-43.200.
Minomura, Shigeru. Metallic modified material of intermetallic compound and a process for the production of the same. 4,225,409, Cl. 204-192.00S.
Minorikawa, Hitoshi: *See—*
Nakazawa, Terumi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; Nagae, Hiromitsu; and Inui, Tomoji, 4,224,917, Cl. 123-647.000.
Mirza, Zia I.; Knell, Everett W.; and Winter, Bruce L., to Occidental Petroleum Corporation. Recovering hydrocarbons from hydrocarbon-containing vapors. 4,225,415, Cl. 208-8.00R.
Mitsubishi Chemical Industries, Limited: *See—*
Toriya, Jun; Shiraga, Ken; Onoda, Takeru; and Ohno, Akihisa, 4,225,729, Cl. 560-263.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Iwamoto, Yasuo, 4,225,975, Cl. 455-212.000.
Yamada, Kunio, 4,225,015, Cl. 187-29.00R.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Imai, Hiroto, 4,224,851, Cl. 83-117.000.
Mitsuda, Tadao; Iwata, Minoru; and Sugiura, Masatoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the amount of secondary air fed into an internal combustion engine. 4,224,911, Cl. 123-589.000.
Mitsuwa Photo Industry Co. Ltd.: *See—*
Nakamura, Toyosaku, 4,225,105, Cl. 248-185.000.
Mittermaier, Erich: *See—*
Riedl, Josef; Frohlich, Walter; and Mittermaier, Erich, 4,225,520, Cl. 260-656.00R.
Miwa, Hirohide; and Shiratori, Eiichi, to Fujitsu Limited. Broadcast acknowledgement method and system. 4,225,967, Cl. 455-68.000.
Miwa, Katsuteru: *See—*
Makino, Tomoatsu; Hirano, Yoshio; and Miwa, Katsuteru, 4,225,796, Cl. 307-261.000.
Miyadera, Yasuo: *See—*
Makino, Daisuke; Miyadera, Yasuo; Harada, Seiki; and Saiki, Atsushi, 4,225,702, Cl. 528-353.000.
Miyake, Masaya: *See—*
Fujimori, Naoji; Miyake, Masaya; Yamamoto, Takaharu; and Hara, Akio, 4,225,344, Cl. 75-203.000.
Miyamoto, Yukihiko, to Trio Kabushiki Kaisha. Double superheterodyne receiver. 4,225,974, Cl. 455-207.000.
Miyasaka, Yutaka: *See—*
Shichijo, Hajime; and Miyasaka, Yutaka, 4,225,971, Cl. 455-155.000.
Miyashita, Yukikazu, to Nissin Kogyo Kabushiki Kaisha. Method of making the body of a hydraulic master cylinder. 4,224,727, Cl. 29-156.4WL.
Miyata, Etsutaro; and Tonomura, Toshiya, to Sharp Kabushiki Kaisha. Finned tube useful for heat exchangers. 4,224,984, Cl. 165-184.000.
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Packaging paper near end detecting device in coin packaging machine. 4,224,777, Cl. 53-641.000.
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, to Laurel Bank Machine Co., Ltd. Device for setting quantity of packaging paper feed in a coin packaging machine. 4,224,778, Cl. 53-64.000.
Mizuno, Hiroshi: *See—*
Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, 4,225,585, Cl. 424-114.000.
Mobil Oil Corporation: *See—*
Arbit, Harold A., 4,225,403, Cl. 204-159.140.
Blount, Elmo M., 4,224,989, Cl. 166-250.000.
Braid, Milton, 4,225,448, Cl. 252-42.700.
Horodysky, Andrew G.; and Landis, Phillip S., 4,225,488, Cl. 260-139.000.
Law, Derek A.; Davis, Robert H.; and Andress, Harry J., 4,225,447, Cl. 252-34.700.
Nipe, Richard N.; Schick, John W.; and Gemmill, Robert M., Jr., 4,225,739, Cl. 585-525.000.
Mochizuki, Koichi: *See—*
Hirano, Reiji; Mochizuki, Koichi; Yasui, Tokio; and Shimazu, Jyoji, 4,225,932, Cl. 364-710.000.
Moflag, Per, to Thune-Eureka A/S. Wrapping machine. 4,224,782, Cl. 53-587.000.
Mohney, Harold F.; and Riggs, Darius O., to Owens-Illinois, Inc. Guide rail system for use on inspection machines. 4,225,035, Cl. 198-836.000.
Moiroud, Guy; and Veron, Serge, to Thomson-CSF. Method and a device for analyzing a pyroelectric target. 4,225,882, Cl. 358-113.000.
Moncrieff-Yeates, Alexander J. Room air recirculating heater with utility compartments and doors storable therewithin. 4,224,922, Cl. 126-121.000.
Monden, Hiroshi, to Nippon Electric Co., Ltd. Exponential function computing apparatus. 4,225,933, Cl. 364-715.000.
Monnier, Jean-Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Respirators. 4,224,940, Cl. 128-205.160.
Monsanto Company: *See—*
Dyroff, David R.; and Papanu, Victor D., 4,225,685, Cl. 525-401.000.
Montblanc-Simplo GmbH: *See—*
Rosler, Jurgen; and Herrnring, Gunther, 4,225,256, Cl. 401-209.000.
Moore, Carl O., to A. E. Staley Manufacturing Company. Demolding confections with steam. 4,225,627, Cl. 426-548.000.

Moore, Edwin C.; Rogers, Robert J.; and Wiechman, Donald G., to International Business Machines Corporation. Welding tubular armature tabs using TIG. 4,225,770, Cl. 219-137.00R.

Moran, Joseph M.; and Taylor, Gary N., to Bell Telephone Laboratories, Incorporated. X-ray resist containing poly(2,3-dichloro-1-propyl acrylate) and poly(glycidyl methacrylate-co-ethyl acrylate). 4,225,664, Cl. 430-306.000.

Moran, Richard M., to TRW Inc. Controller for bubble memories. 4,225,941, Cl. 364-900.000.

Morgner, Friedrich W.; Hock, Franz; and Stock, Hans G., to Temafa Textilmaschinenfabrik Meissner, Morgner & Co. GmbH. Apparatus for the opening-up and cleaning of cotton waste. 4,224,720, Cl. 19-204.000.

Mori, Yasukazu: *See*—
Harase, Jirou; Nakashima, Shozaburo; and Mori, Yasukazu, 4,225,366, Cl. 148-111.000.

Morin, Claude, to Enertec. Parallel line printer. 4,224,869, Cl. 101-93.040.

Morin, Michel; and Rousseau, Alain, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Device for measuring the compactness of cigarettes or the like. 4,224,822, Cl. 73-81.000.

Morita, Akira: *See*—
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,225,083, Cl. 239-132.300.

Morita, Kiyomi: *See*—
Takamaru, Takeshi; Kashiwaya, Mineo; Morita, Kiyomi; and Oobayashi, Seiji, 4,225,535, Cl. 261-34.00B.

Moriyama, Hideo; and Katoogi, Masayuki, to Moriyama Sangyo Kabushiki Kaisha. Fluorescent light fixture. 4,225,905, Cl. 362-216.000.

Moriyama Sangyo Kabushiki Kaisha: *See*—
Moriyama, Hideo; and Katoogi, Masayuki, 4,225,905, Cl. 362-216.000.

Moriyasu, Hiro; Gilmore, Jack A.; Velsink, Willem B.; and Havarro, Luis J., to Tektronix, Inc. Oscilloscope system for acquiring, processing, and displaying information. 4,225,940, Cl. 364-900.000.

Morlock, Gerhard: *See*—
Amann, Herbert; Morlock, Gerhard; and Trautwein, Hellmut, 4,225,703, Cl. 528-480.000.

Morris, Don L.; and McCollum, Anthony W., to Eastman Kodak Company. Catalytic condensation of aldehydes to 1,3-glycol monoesters. 4,225,726, Cl. 560-238.000.

Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. Pyrimido(4,5-c)pyridazines. 4,225,710, Cl. 544-236.000.

Morrissey, William J.: *See*—
Koop, Nicholas S.; and Morrissey, William J., 4,225,262, Cl. 403-272.000.

Morton-Norwich Products, Inc.: *See*—
Alaimo, Robert J.; and Milliner, Ozra E., Jr., 4,225,526, Cl. 260-397.70R.
Wright, George C., 4,225,717, Cl. 546-306.000.

Morton, Reginald F.; and Glover, Sidney, to USM Corporation. Nozzle cap having opening means. 4,225,058, Cl. 222-81.000.

Moser, Gottfried, to Klockner-Humboldt-Deutz Aktiengesellschaft. Motor vehicle, especially agricultural motor vehicle. 4,225,176, Cl. 296-190.000.

Moskovsky Tekhnologicheskiy Institut Myasoni I Molochnoi Promysh Lennosti: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Motorola, Inc.: *See*—
Davis, William F.; and Shumway, Howard G., 4,225,854, Cl. 340-347.0AD.
Hepworth, Edward C.; and Means, Rodney J., 4,225,917, Cl. 364-200.000.
Ho, Roland K., 4,225,632, Cl. 427-79.000.
Jaramillo, Giovanni; Teitzman, Melvin; and Lipinski, Richard D., 4,225,970, Cl. 455-89.000.
Kyu, Shikun; and Hepworth, Edward C., 4,225,919, Cl. 364-200.000.

Mottier, Francois: *See*—
Dandliker, Rene; Lanz, Otto; and Mottier, Francois, 4,225,241, Cl. 356-400.000.

Mouzin, Gilbert: *See*—
Tarayre, Jean-Pierre; Cousse, Henri; Mouzin, Gilbert; Lauressergues, Henri; and Casadio, Silvano, 4,225,610, Cl. 424-270.000.

Movchan, Vladimir V.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Movick, Nyle O. Heating system. 4,224,925, Cl. 126-427.000.

Mowbray, Dorian F., to Lucas Industries Limited. Fuel systems for internal combustion engines. 4,224,903, Cl. 123-300.000.

Muehldorf, Eugen I.: *See*—
Doty, Charles R., Jr.; Muehldorf, Eugen I.; and Shah, Himanshu G., 4,225,957, Cl. 371-15.000.

Mueller, Ulrich: *See*—
Puchinger, Herwig; Mueller, Ulrich; and Sernetz, Manfred, 4,225,671, Cl. 435-71.000.

Mugele, Kurt; and Nagel, Bodo, to Siemens Aktiengesellschaft. Pump set comprising a liquid ring vacuum pump preceeded by a compressor. 4,225,288, Cl. 417-2.000.

Muller-Calgan, Helmut: *See*—
Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.

Muller, Dieter; Endlich, Wilhelm; and Kugler, Siegfried. Dowel or anchoring means. 4,224,971, Cl. 151-41.700.

Muller, Hans, to Chemap AG. Filter element. 4,225,441, Cl. 210-356.000.

Muller, Ulrich: *See*—
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.

Muller, Walter: *See*—
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,225,489, Cl. 260-154.000.

Munding, German: *See*—
Sowa, Armin; and Munding, German, 4,224,991, Cl. 166-272.000.

Munk, Edmund; and Henke, Hermann, to Werzalit J F Werz Jr Kg Pressholzwerk. Method of and an apparatus for making preforms from a pourable substance. 4,225,545, Cl. 264-72.000.

Munz, Volker: *See*—
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.

Murata Manufacturing Co., Ltd.: *See*—
Kadota, Michio; Sato, Tomoharu; and Suzuki, Kenji, 4,224,725, Cl. 29-25.350.

Murphy, Kevin P.: *See*—
Stiel, Leonard I.; Allen, Robert A.; and Murphy, Kevin P., 4,224,795, Cl. 60-651.000.

Murphy, Paul F.: *See*—
Kuppenheimer, John D., Jr.; and Murphy, Paul F., 4,225,782, Cl. 250-216.000.

Murray, Alan B. Vehicle control speed sensing method and apparatus. 4,225,006, Cl. 180-179.000.

Murray, Ian; and Kampner, Stanley, to Hexcel Corporation. Prosthetic knee. 4,224,696, Cl. 3-1.911.

Murray, Ian; and Kampner, Stanley, to Hexcel Corporation. Constrained prosthetic knee. 4,224,697, Cl. 3-1.911.

Murray, Robert D. H.: *See*—
Dalton, Augustine I., Jr.; Doran, Henry J.; and Murray, Robert D. H., 4,225,694, Cl. 562-506.000.

Murray Tovi Designs, Inc.: *See*—
Tovi, Murray, 4,225,881, Cl. 358-108.000.

Mutoh, Ichiro: *See*—
Nakamura, Moritoshi; Mutoh, Ichiro; and Kiyono, Tetsuhiro, 4,225,843, Cl. 338-120.000.

Muzyczko, Thaddeus M., to Richardson Company, The. Photoreactive coating compositions and photomechanical plates produced therewith. 4,225,661, Cl. 430-156.000.

Myers, Harry K., Jr., to Sun Oil Company of Pennsylvania. Codimer of norbornadiene and cyclohexadiene. 4,225,736, Cl. 585-360.000.

Myers, Harry K., Jr.: *See*—
Hall, Lewis W., Jr.; Tice, John D.; Myers, Harry K., Jr.; and Schneider, Abraham, 4,225,735, Cl. 585-360.000.

Myers, John W., to Phillips Petroleum Company. Alumina isomerization process. 4,225,419, Cl. 208-135.000.

Nagae, Hiromitsu: *See*—
Nakazawa, Terumi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; Nagae, Hiromitsu; and Inui, Tomoji, 4,224,917, Cl. 123-647.000.

Nagai, Katsumi: *See*—
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.

Nagai, Kiyotaka: *See*—
Kawabuchi, Masami; Sato, Jun-ichi; Nagai, Kiyotaka; Fukukita, Hiroshi; and Fukumoto, Akira, 4,224,829, Cl. 73-626.000.

Nagata, Katsuyuki: *See*—
Hasegawa, Mutsuo; Hirono, Hatsuo; Nagata, Katsuyuki; Hayashi, Shinji; and Yamagata, Hiroshi, 4,225,398, Cl. 204-33.000.

Nagel, Bodo: *See*—
Mugele, Kurt; and Nagel, Bodo, 4,225,288, Cl. 417-2.000.

Nagel, Hartmut: *See*—
Zimmermann, Hans; Pieper, Fritz; Blauth, Konrad; and Nagel, Hartmut, 4,225,129, Cl. 271-204.000.

Nagumo, Shin-ichi: *See*—
Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,224,792, Cl. 60-305.000.

Nakabayashi, Satoru: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.

Nakagata, Norio: *See*—
Takayama, Shoichiro; Nakagata, Norio; and Katsuno, Takeharu, 4,225,888, Cl. 358-288.000.

Nakahara, Yutaka: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Takahashi, Masayuki, 4,225,474, Cl. 260-23.0XA.

Nakajima, Shokichi: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.

Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, to Nippon Soda Company, Ltd. Adsorbent for urokinase and process for the production of urokinase. 4,225,675, Cl. 435-215.000.

Nakamura, Moritoshi; Mutoh, Ichiro; and Kiyono, Tetsuhiro, to Alps Electric Co., Ltd. Variable attenuator. 4,225,843, Cl. 338-120.000.

Nakamura, Toyosaku, to Mitsuwa Photo Industry Co. Ltd. Tilt mounting. 4,225,105, Cl. 248-185.000.

Nakanishi, Takenori; Yoshikawa, Yuji; and Tagaeto, Takao, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Nuclear fuel reprocessing apparatus. 4,225,560, Cl. 422-159.000.

Nakanishi, Tosaku: *See*—
Takenaka, Takashi; Maegawa, Masaaki; and Nakanishi, Tosaku, 4,225,890, Cl. 360-72.100.

Nakashima, Shozaburo: *See*—
Harase, Jirou; Nakashima, Shozaburo; and Mori, Yasukazu, 4,225,366, Cl. 148-111.000.

Nakasu, Kei, to Toyota Jidosha Kogyo Kabushiki Kaisha. Safety device for a double-circuit type air brake for a vehicle. 4,225,194, Cl. 303-84.00A.

Nakazawa, Terumi; Minorikawa, Hitoshi; Kobayashi, Kazutoshi; Nagae, Hiromitsu; and Inui, Tomoji, to Hitachi, Ltd. Ignition device. 4,224,917, Cl. 123-647.000.

Nalaskowski, Detlef: *See*—
Sgaslik, Friedrich; and Nalaskowski, Detlef, 4,225,327, Cl. 55-324.000.

Nalco Chemical Company: *See*—
Kugel, Roger W., 4,225,317, Cl. 44-6.000.

Napier, Garrett H., to Ford Motor Company. New and unique aluminum plating method. 4,225,397, Cl. 204-29.000.

National Mine Service Company: *See*—
LeBegue, Maurice K., 4,225,189, Cl. 299-71.000.

National Research Development Corporation: *See*—
Gallop, John C.; and Potts, Susan P., 4,225,818, Cl. 324-302.000.

National Semiconductor Corporation: *See*—
Dobkin, Robert C., 4,225,878, Cl. 357-51.000.

Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., to International Paper Company. Composite container for storing food. 4,225,053, Cl. 220-416.000.

Naum, Robert G.: *See*—
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,225,467, Cl. 252-478.000.

Nayak, Pangal N.: *See*—
Piasio, Roger N.; Perry, David A.; and Nayak, Pangal N., 4,225,575, Cl. 424-1.000.

Neale, Ronald G.; and Wood, Grady M., to Harris Corporation. Multilevel erase pulse for amorphous memory devices. 4,225,946, Cl. 365-163.000.

Nederman, Bill P. P. Wind-up device for flexible conduits, such as hydraulic hoses. 4,224,960, Cl. 137-355.230.

Neeff, Rutger: *See*—
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, 4,225,489, Cl. 260-154.000.

Neely, Derek K.: *See*—
Hills, Richard E.; and Neely, Derek K., 4,225,055, Cl. 220-452.000.

Neighbor, Larry; and Roche, George, to BLD Products, Ltd. Diaphragm assembly. 4,224,860, Cl. 92-100.000.

Nelkin, Leon. Vibrating apparatus. 4,224,931, Cl. 128-32.000.

Nelson, Thomas J., to Atlantic Richfield Company. Catalytic reforming process with sulfur removal. 4,225,417, Cl. 208-89.000.

Nemeth, Sandor: *See*—
Matyasi, Jozsef; Kokeny, Bela; Zsembery, Laszlo; Kaptay, Gyorgy; and Nemeth, Sandor, 4,225,639, Cl. 427-372.200.

Nerlich, Ernst-Gunter, to Bochmer Eisennuette Heintzmann GmbH. Hydraulically operated mine roof support and a control arrangement thereof. 4,225,271, Cl. 405-302.000.

Neuroth, Norbert: *See*—
Faulstich, Marga; Jahn, Walter; Krolla, Georg; and Neuroth, Norbert, 4,225,459, Cl. 252-301.40P.

Newell, Richard G., to Minnesota Mining and Manufacturing Company. Latent Lewis acid catalyst system and process. 4,225,460, Cl. 252-429.00R.

Newton, Charles G., Jr., to USM Corporation. Novel polymeric compositions for footwear tread members containing a halogenated polyethylene and a block copolymer. 4,225,500, Cl. 260-33.6AQ.

Nichols, Richard D. E.: *See*—
Bianchi, John E.; and Nichols, Richard D. E., 4,225,067, Cl. 224-243.000.

Nickel, Horst; and Suckfull, Fritz, to Bayer Aktiengesellschaft. Disazo dyestuffs derived from three carbocyclic components including a terminal component substituted with sulfo and alkoxy. 4,225,493, Cl. 260-186.000.

Nielsen, Hugo. Method of and apparatus for the performing of a therapeutic effect. 4,224,930, Cl. 128-25.00B.

Nightingale, David E.: *See*—
Freeman, George M.; and Nightingale, David E., 4,225,342, Cl. 75-109.000.

Niimi, Yukihisa; Kakuse, Junko; Sato, Toshio; and Kawanaka, Hideo, to Kao Soap Co., Ltd. Dye composition containing a copolymer of ethylene oxide and propylene oxide as nonionic surfactant. 4,225,311, Cl. 8-524.000.

Nilles, Paul E., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Refining iron in a converter. 4,225,341, Cl. 75-60.000.

Nilsson, Sven W., to SKF Nova AB. Device for transferring a rotational motion into a longitudinal movement or vice versa. 4,224,831, Cl. 74-89.000.

Ninomiya, Michikazu: *See*—
Wada, Masahiro; Ueshima, Michio; Yanagisawa, Isao; and Ninomiya, Michikazu, 4,225,466, Cl. 252-435.000.

Nipe, Richard N.; Schick, John W.; and Gemmill, Robert M., Jr., to Mobil Oil Corporation. Process for improving olefin polymer oil properties. 4,225,739, Cl. 585-525.000.

Nippon Electric Co., Ltd.: *See*—
Monden, Hiroshi, 4,225,933, Cl. 364-715.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Ando, Shigeo; and Kondou, Takayasu, 4,224,856, Cl. 84-1.190.
Ogita, Minoru, 4,225,823, Cl. 455-226.000.
Ogita, Minoru, 4,225,972, Cl. 455-158.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Yoshikawa, Hiroshi, 4,225,534, Cl. 260-465.00G.

Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See*—
Wada, Masahiro; Ueshima, Michio; Yanagisawa, Isao; and Ninomiya, Michikazu, 4,225,466, Cl. 252-435.000.

Nippon Soda Company, Ltd.: *See*—
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,225,675, Cl. 435-215.000.

Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Kobashi, Mamoru; Kawase, Tooru; and Ueno, Yoshiki, 4,225,925, Cl. 364-431.000.
Kotera, Masao; and Kago, Yoshiyuki, 4,225,950, Cl. 367-97.000.

Nippon Steel Corporation: *See*—
Harase, Jirou; Nakashima, Shozaburo; and Mori, Yasukazu, 4,225,366, Cl. 148-111.000.

Nippondenso Co., Ltd.: *See*—
Makino, Tomoatsu; Hirano, Yoshio; and Miwa, Katsuteru, 4,225,796, Cl. 307-261.000.
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.
Tanaka, Kazuo; Takenaka, Osamu; and Suzuki, Masatosi, 4,225,634, Cl. 427-101.000.

Nishihata, Ken: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.

Nissan Chemical Industries Limited: *See*—
Hoshiyama, Satoshi; Fukushima, Shuichi; Kobayashi, Hiroshi; and Takamatsu, Hideki, 4,225,743, Cl. 585-512.000.

Nissan Motor Company, Limited: *See*—
Hayashi, Yoshimasa; and Nagumo, Shin-ichi, 4,224,792, Cl. 60-305.000.
Okabayashi, Shigeru, 4,225,005, Cl. 180-90.000.
Sugasawa, Fukashi; Iizuka, Haruhiko; Matsumoto, Junichiro; and Etoh, Yukihiro, 4,224,920, Cl. 123-198.00F.
Tagawa, Naoji, 4,224,967, Cl. 139-108.000.
Tanaka, Jiro; and Tsuchiya, Yoshimasa, 4,225,166, Cl. 292-341.170.
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,225,026, Cl. 192-70.200.

Nissin Kogyo Kabushiki Kaisha: *See*—
Miyashita, Yukikazu, 4,224,727, Cl. 29-156.4WL.

Noranda Mines Limited: *See*—
LeRoy, Rodney L.; Hammerli, Martin; and Butler, John P., 4,225,402, Cl. 204-129.000.

Nordin, Kenneth I.: *See*—
Edblom, Karl G.; Nordin, Kenneth I.; Staaf, Per O.; Stenberg, Erik G.; Strand, Nils-Erik; and Svensson, Bo L. H., 4,225,386, Cl. 162-343.000.

Nordstrom, Walter A.; Brilts, Bruno, deceased (by Brilts, Nina, heir); and by Dumoulin, Rasma, heir, to Ford Motor Company. Backhoe boom transport locking means. 4,225,282, Cl. 414-694.000.

Norris, Geoffrey L. F.: *See*—
Davies, Daivd H.; and Norris, Geoffrey L. F., 4,225,593, Cl. 424-185.000.

North American Philips Corporation: *See*—
Ragan, Randall C., 4,225,845, Cl. 338-174.000.

Northern Border Pipeline Company: *See*—
Somerville, Francis S., 4,224,966, Cl. 138-172.000.

Northern Engineering & Plastics Corporation: *See*—
Crisci, Harry, 4,225,303, Cl. 425-525.000.

Northwestern University: *See*—
Wu, Anna F.; and Wu, Tai T., 4,224,942, Cl. 128-214.00R.

Nott, Alan J.: *See*—
Price, William M.; and Nott, Alan J., 4,225,425, Cl. 209-5.000.
Price, William M.; and Nott, Alan J., 4,225,426, Cl. 209-5.000.

Nourigat, Gerard: *See*—
Jacoub, Michel; and Nourigat, Gerard, 4,225,780, Cl. 235-449.000.

Novitas, Inc.: *See*—
Saraceni, Remo, 4,225,808, Cl. 315-307.000.

Nowell, Richard A., to Harris-Hub Co., Inc. Adjustable and foldable bed frame. 4,224,704, Cl. 5-181.000.

Nuclear Power Company Limited: *See*—
Gatley, John A., 4,225,387, Cl. 176-18.000.
Howard, Roy S.; Hodgson, Donald; Dale, James G.; and Hall, Clifford T. M., 4,225,389, Cl. 176-40.000.

Nudenberg, Walter: *See*—
Mao, Chung-Ling; and Nudenberg, Walter, 4,225,645, Cl. 428-290.000.

Numata, Saburo, to Fuji Photo Optical Co., Ltd. Exposure time control circuit for camera with flash light device. 4,225,218, Cl. 354-23.00D.

Nusslein, Ludwig; and Arndt, Friedrich, to Schering A G. Urea derivatives, process for making the same and herbicidal composition containing the same. 4,225,338, Cl. 71-120.000.

O'Brien, Daniel J., to General Motors Corporation. Closed loop fuel control system with air/fuel sensor voting logic. 4,224,910, Cl. 123-440.000.

O'Brien, Joseph P.: *See*—
Papay, Andrew G.; and O'Brien, Joseph P., 4,225,449, Cl. 252-46.600.
Occidental Oil Shale, Inc.: *See*—
Cha, Chang Y., 4,224,990, Cl. 166-256.000.
Occidental Petroleum Corporation: *See*—
Mirza, Zia I.; Knell, Everett W.; and Winter, Bruce L., 4,225,415, Cl. 208-8.00R.
Occidental Research Corporation: *See*—
Reiss, Howard, 4,225,412, Cl. 204-301.000.
Ochi, Kiyoshige; Matsunaga, Isao; Shindo, Minoru; and Kaneko, Chikara, to Chugai Seiyaku Kabushiki Kaisha. Steroid derivatives and process for preparing the same. 4,225,524, Cl. 260-397.200.
Ochlich, Peter P.: *See*—
Goring, Joachim E.; and Ochlich, Peter P., 4,225,607, Cl. 424-253.000.
Oerlikon-Buhrle AG: *See*—
Kotthaus, Erich, 4,224,834, Cl. 74-462.000.
Ogan, Kenneth L., to Boston University, The Trustees of. Rapid scan spectrophotometer. 4,225,233, Cl. 356-308.000.
Ogawa, Seiichi; Ohgawara, Yoshiaki; and Ohtsuka, Kenichi, to Sony Corporation. Side pincushion correction circuit. 4,225,809, Cl. 315-371.000.
Ogawa, Tadashi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Front end circuits of FM receivers. 4,225,823, Cl. 455-226.000.
Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. System for indicating frequency of station signal received by superheterodyne radio receiver. 4,225,972, Cl. 455-158.000.
Ohgawara, Yoshiaki: *See*—
Ogawa, Seiichi; Ohgawara, Yoshiaki; and Ohtsuka, Kenichi, 4,225,809, Cl. 315-371.000.
Ohkubo, Tetsuo, to Oki Electric Industry Co., Ltd. System for automatically positioning the carriage of a machine in numerical control system at a reference point. 4,225,928, Cl. 364-474.000.
Ohlson, John L.: *See*—
Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., 4,225,502, Cl. 260-465.00E.
Ohlson, Kurt L. Device for clamping two generally parallel directed members. 4,224,721, Cl. 24-81.0TH.
Ohno, Akihisa: *See*—
Toriya, Jun; Shiraga, Ken; Onoda, Takeru; and Ohno, Akihisa, 4,225,729, Cl. 560-263.000.
Ohno, Hiroyuki: *See*—
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,225,673, Cl. 435-101.000.
Ohno, John M., to General Electric Company. Method of compacting dry powder into shapes. 4,225,546, Cl. 264-114.000.
Ohta Company Limited: *See*—
Iseki, Kazuo, 4,224,715, Cl. 16-135.000.
Ohtomo, Ryuji. Film carrying roller. 4,225,097, Cl. 242-55.010.
Ohtsuka, Kenichi: *See*—
Ogawa, Seiichi; Ohgawara, Yoshiaki; and Ohtsuka, Kenichi, 4,225,809, Cl. 315-371.000.
Ohtsuka, Kunio: *See*—
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,225,026, Cl. 192-70.200.
Oji Paper Co., Ltd.: *See*—
Ishikawa, Hisao; Kita, Yukio; and Horikoshi, Kouki, 4,225,381, Cl. 162-51.000.
Oka, Ken K.: *See*—
Kirkpatrick, Kenneth L.; Spicer, Dalton H.; and Oka, Ken K., 4,224,783, Cl. 56-13.500.
Okabayashi, Shigeru, to Nissan Motor Company, Limited. Setup of meter indication display in automobile. 4,225,005, Cl. 180-90.000.
Okabe, Itsuro: *See*—
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,224,918, Cl. 123-657.000.
Okamoto, Setsuo: *See*—
Marukawa, Katsukiyo; Okamoto, Setsuo; Yamada, Kazunari; and Iba, Masahisa, 4,225,565, Cl. 423-208.000.
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, to Pioneer Electronic Corporation. Electronic tuning type receiver having a band display and numerical frequency display. 4,225,968, Cl. 455-154.000.
Okazaki, Kuniaki: *See*—
Sano, Jyunji; and Okazaki, Kuniaki, 4,225,779, Cl. 235-379.000.
Oki Electric Industry Co., Ltd.: *See*—
Ohkubo, Tetsuo, 4,225,928, Cl. 364-474.000.
Takayama, Shoichiro; Nakagata, Norio; and Katsuno, Takeharu, 4,225,888, Cl. 358-288.000.
Okita, Koichi, to Sumitomo Electric Industries, Ltd. Extrusion process of polytetrafluoroethylene tubing materials and apparatus therefor. 4,225,547, Cl. 264-127.000.
Okumura, Yoshiharu: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Okumura, Yoshiharu; and Kaneko, Katsumi, 4,225,727, Cl. 560-244.000.
Olander, Walter K.: *See*—
Banucci, Eugene G.; and Olander, Walter K., 4,225,528, Cl. 260-429.00J.
Olejnik, Peter: *See*—
Rysanek, Duson; Kotrc, Bohumir; Hamalcik, Jaroslav; and Olejnik, Peter, 4,225,820, Cl. 1324-450.000.
Olevsky, Viktor M.: *See*—
Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; and Baskov, Jury A., 4,225,538, Cl. 261-92.000.
Olin Corporation: *See*—
Cline, Warren K.; McCarty, Stuart W.; and Owens, William F., Jr., 4,225,636, Cl. 427-243.000.
Kleine, Charles A.; and Belangee, Kenneth, 4,224,817, Cl. 72-54.000.
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,225,599, Cl. 424-250.000.
Olson, Gary L., to Hoffmann-La Roche Inc. Process for preparation of polyene aldehydes. 4,225,514, Cl. 568-447.000.
Olson, Joel J.: *See*—
Frisbie, Donald; Frisbie, Larry D.; and Olson, Joel J., 4,225,031, Cl. 198-395.000.
Oltrona Visconti, Lucchino. Removable furniture covering. 4,225,179, Cl. 297-219.000.
Olympus Optical Co., Ltd.: *See*—
Furihata, Hiroyuki, 4,224,929, Cl. 128-5.000.
Omni Plastic Products, Inc.: *See*—
Suchor, Ronald, 4,224,965, Cl. 138-154.000.
Omron Tateisi Electronics Co.: *See*—
Sano, Jyunji; and Okazaki, Kuniaki, 4,225,779, Cl. 235-379.000.
Onder, Kemal B.; and Recchia, Frank P., to Upjohn Company, The. Blends of copolyimides with copolyamideimides. 4,225,686, Cl. 525-419.000.
Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Pyrrolo or pyrido [2,1-c][1,4] thiazines or thiazepines. 4,225,495, Cl. 260-244.400.
O'Neal, Hubert R., to Denka Chemical Corporation. Sulfur modified polychloroprene with improved storage stability. 4,225,682, Cl. 525-76.000.
Onishi, Hiroshi: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.
Ono, Koichi: *See*—
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.
Onoda, Takeru: *See*—
Toriya, Jun; Shiraga, Ken; Onoda, Takeru; and Ohno, Akihisa, 4,225,729, Cl. 560-263.000.
Ontario Energy Corporation: *See*—
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.
Oobayashi, Seijl: *See*—
Takamaru, Takeshi; Kashiwaya, Mineo; Morita, Kiyomi; and Oobayashi, Seijl, 4,225,535, Cl. 261-34.00B.
Ooka, Isami, to Osaka Gas Company, Limited. Apparatus and process for vaporizing liquefied natural gas. 4,224,802, Cl. 62-52.000.
Ootaka, Kazuo: *See*—
Tsuchiya, Mikio; Kawamura, Takashi; Ootaka, Kazuo; and Ozaki, Yukio, 4,225,644, Cl. 428-215.000.
Op den Camp, Lutz E. A., to Girling Limited. Disc brake and support structure therefor. 4,225,017, Cl. 188-73.300.
Opalka, Chester J., Jr.: *See*—
Lesher, George Y.; and Opalka, Chester J., Jr., 4,225,601, Cl. 424-263.000.
Lesher, George Y.; and Opalka, Chester J., Jr., 4,225,715, Cl. 546-257.000.
Opelika Manufacturing Corp.: *See*—
Burton, Perry E., 4,224,886, Cl. 112-121.150.
Optical Coating Laboratory, Inc.: *See*—
Small, Edward A., Jr., 4,225,908, Cl. 362-293.000.
Optische Werke G. Rodenstock: *See*—
Wilms, Karl-Heinz, 4,225,231, Cl. 356-127.000.
Opto Produkte AG: *See*—
Rottenkolber, Hans, 4,225,237, Cl. 356-348.000.
Rottenkolber, Hans, 4,225,238, Cl. 356-348.000.
Orevik, Sune A. W.: *See*—
Lind, Hans S. H.; and Orevik, Sune A. W., 4,225,815, Cl. 320-39.000.
Orscheln Lever Sales Co.: *See*—
Lipshield, Eugene C., 4,225,004, Cl. 180-89.140.
Orszullok, Willy, to ITT Industries, Inc. Change valve. 4,224,962, Cl. 137-465.000.
Ortloff, John E., to Exxon Production Research Company. Low friction remotely operable clamp type pipe connector. 4,225,160, Cl. 285-137.00A.
Osaka City & Taiyo Manufacturing Works Co., Ltd.: *See*—
Yotsutsuji, Akira; Ueda, Seiichi; and Iwami, Hiroyuki, 4,225,109, Cl. 249-111.000.
Osaka Gas Company, Limited: *See*—
Ooka, Isami, 4,224,802, Cl. 62-52.000.
Osborne, William P.; Hartman, William F.; and Crabtree, Luther L., to Harris Corporation. Pre-calibration of gain control circuit in spread-spectrum demodulator. 4,225,976, Cl. 455-226.000.
Oscarson, John R.: *See*—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,225,674, Cl. 435-122.000.

Ostwald, Fritz, to ITT Industries, Inc. Arrangement for generating and making available a vacuum for vehicular auxiliary power systems. 4,224,791, Cl. 60-397.000.

O'Sullivan, Thomas D.: *See—*
Helliker, Conrad D.; and O'Sullivan, Thomas D., 4,225,346, Cl. 75-211.000.

Ottemann, William C., to Barient Company. Direct drive deck winch. 4,225,118, Cl. 254-333.000.

Outokumpu Oy: *See—*
Holmi, Ismo V. J.; and Virtanen, Ismo I., 4,224,850, Cl. 83-105.000.

Owens-Corning Fiberglas Corporation: *See—*
Brooks, Julius C.; Pfeifer, Kenneth D.; and Sommerkamp, Robert M., 4,225,302, Cl. 425-438.000.
Hohman, Charles M., 4,225,543, Cl. 264-40.400.
Tsay, Quey T., 4,225,332, Cl. 65-134.000.

Owens, Dean P.: *See—*
McMurtry, Carl H.; Naum, Robert G.; Owens, Dean P.; and Hortman, Michael T., 4,225,467, Cl. 252-478.000.

Owens-Illinois, Inc.: *See—*
Mohney, Harold F.; and Riggs, Darius O., 4,225,035, Cl. 198-836.000.

Owens, William F., Jr.: *See—*
Cline, Warren K.; McCarty, Stuart W.; and Owens, William F., Jr., 4,225,636, Cl. 427-243.000.

Oy Wilh. Schauman Ab: *See—*
Valkama, Paavo J., 4,225,384, Cl. 162-199.000.

Oyama, Shiro: *See—*
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.

Ozaki, Yukio: *See—*
Tsuchiya, Mikio; Kawamura, Takashi; Ootaka, Kazuo; and Ozaki, Yukio, 4,225,644, Cl. 428-215.000.

Pace Incorporated: *See—*
Litt, Kenneth C.; and Vella, Alexander J., 4,225,076, Cl. 228-20.000.
Siegel, William J.; and Ferguson, Gerald J., Jr., 4,224,744, Cl. 35-13.000.

Pace, Salvatore J., to Technicon Instruments Corporation. Integrated array of electrochemical sensors. 4,225,410, Cl. 204-195.00R.

Page Engineering Company (Sunbury-on-Thames), Ltd.: *See—*
Baxter, Ronald W., 4,224,752, Cl. 40-463.000.

Pako Corporation: *See—*
Strunc, Gerald R., 4,225,073, Cl. 226-49.000.

Palin, William J.; and Miller, Timothy C., to Abbott Laboratories. Determination of microbial cells in aqueous samples. 4,225,783, Cl. 250-302.000.

Palmaer, Tore G. Accessory support member for a helmet. 4,224,694, Cl. 2-422.000.

Palmqvist, Kaj. Apparatus for controlling the activation and de-activation of a vacuum assembly connected to a conduit system. 4,225,272, Cl. 406-15.000.

PanCanadian Petroleum Limited: *See—*
Trevoy, Lloyd; and Maskwa, Alvin, 4,225,422, Cl. 209-2.000.

Panchak, John R.: *See—*
DePaul, Harry V.; Fondots, David C.; Mascioli, Rocco L.; and Panchak, John R., 4,225,453, Cl. 252-182.000.

Paolino, Roland. Method of making an adjustable finger ring. 4,224,728, Cl. 29-160.600.

Papadakis, George M. Easel arrangement and method. 4,225,223, Cl. 355-74.000.

Papanu, Victor D.: *See—*
Dyroff, David R.; and Papanu, Victor D., 4,225,685, Cl. 525-401.000.

Papay, Andrew G.; and O'Brien, Joseph P., to Edwin Cooper, Inc. Lubricating oil and fuel compositions. 4,225,449, Cl. 252-46.600.

Para, Serenella F. Device for mixing and metering the contents of containers, particularly for paints, dyes and the like, and shelf or shelving adopting such a device. 4,225,248, Cl. 366-251.000.

Parent, Richard A. Articles having thin, continuous, impervious coatings. 4,225,647, Cl. 428-336.000.

Parikh, Indu: *See—*
Cuatrecasas, Pedro; and Parikh, Indu, 4,225,487, Cl. 260-121.000.

Park Energy Company: *See—*
Werner, Frank D.; Kleven, Lowell A.; Case, James T.; and Bloomfield, Roger D., 4,224,928, Cl. 126-450.000.

Parker, Charles M., Jr. Electrostatic motor. 4,225,801, Cl. 310-308.000.

Parsons, George W., Jr.; and Drainoni, Riccardo A., to Technical Operations, Incorporated. Storage reel assembly. 4,225,790, Cl. 250-497.000.

Paseman, Richard R.: *See—*
Sentell, John S., 4,225,362, Cl. 134-24.000.

Pat-Chem, Inc.: *See—*
Cashion, James E., Jr., 4,225,646, Cl. 428-290.000.

Pate, Harold T., to Indian Head Inc. Pipe clamp device. 4,225,103, Cl. 248-74.00B.

Patel, Bhupendra C.: *See—*
Taylor, Glenn N.; and Patel, Bhupendra C., 4,225,371, Cl. 156-152.000.

Patel, Dahyabhai M.: *See—*
Won, Chong M.; Zalipsky, Jerome J.; and Patel, Dahyabhai M., 4,225,315, Cl. 23-230.0PC.

Patil, Pandit G., to PPG Industries, Inc. Solar collector for heating a fluid. 4,224,927, Cl. 126-449.000.

Patzlaff, Albert W., to Blueberry Equipment, Inc. Hydrodynamic blueberry sorting. 4,225,424, Cl. 209-3.100.

Pecenko, Igor: *See—*
Vrsnak, Franc; Zadravec, Jurica; and Pecenko, Igor, 4,225,835, Cl. 335-78.000.

Pennbrook Corporation: *See—*
Bals, Edward J., 4,225,084, Cl. 239-223.000.

Pennisi, Francesco: *See—*
Romelli, Pier B.; and Pennisi, Francesco, 4,225,574, Cl. 424-1.000.

Pennock, Villamil and Pilato Inc.: *See—*
Pilato, Louis A., 4,225,679, Cl. 521-109.000.

Pennwalt Corporation: *See—*
Ferren, Richard A.; Dimmig, Daniel A.; and Grigger, John C., 4,225,482, Cl. 260-29.60F.

PepsiCo, Inc.: *See—*
De Longe, Harry C., 4,225,431, Cl. 210-617.000.

Perch, Michael; and Peterson, Alex, Jr., to Koppers Company, Inc. Method of preparing coals for coking. 4,225,391, Cl. 201-6.000.

Perettie, Donald J.; and Dean, Norman L., to Dow Chemical Company, The. Process for recovering 2,3,5,6-tetrachloropyridine. 4,225,718, Cl. 546-345.000.

Perlman, David E., to Detection Systems, Inc. Infrared detection system. 4,225,786, Cl. 250-342.000.

Perreault, Donald A.; and Rich, Thomas C., to Xerox Corporation. Method and apparatus for suppression of error accumulation in recursive computation of a discrete Fourier transform. 4,225,937, Cl. 364-726.000.

Perry, David A.: *See—*
Piasio, Roger N.; Perry, David A.; and Nayak, Pangal N., 4,225,575, Cl. 424-1.000.

Perry, Frank W. Bow sight. 4,224,741, Cl. 33-265.000.

Pesce, Louis. Watertight battery box. 4,225,655, Cl. 429-100.000.

Petel, Maurice: *See—*
Ducos, Maurice; Manfredi, Pierre; Petel, Maurice; and Portal, Guy, 4,225,785, Cl. 250-336.000.

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Petersen, Jorgen S., to Rockwool International A/S. Composite building elements. 4,224,774, Cl. 52-404.000.

Peterson, Alex, Jr.: *See—*
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Peterson, Dean M.; and Skovrinski, Joseph R., to Honeywell Inc. Fluid sample test apparatus and fluid sample cell for use therein. 4,225,558, Cl. 422-72.000.

Peterson, Roger L., to Flamemaster Corporation, The. Fire retardant composition and cables coated therewith. 4,225,649, Cl. 428-383.000.

Petre, Mark L.: *See—*
Lipp, Ellis P.; and Petre, Mark L., 4,225,844, Cl. 338-135.000.

Petrescue, Bernard, to Berwin Development Ltd. Fireplace with air control dampers. 4,224,921, Cl. 126-121.000.

Petro-Canada Exploration Inc.: *See—*
Liu, Joseph K.; Lane, Stephen J.; and Cymbalisty, Lubomyr M., 4,225,433, Cl. 210-702.000.
Trevoy, Lloyd; and Maskwa, Alvin, 4,225,422, Cl. 209-2.000.

Petroski, Alex: *See—*
Taylor, Lauren P.; and Petroski, Alex, 4,224,821, Cl. 73-32.00R.

Petrovich, Vojislav. Froth flotation method for recovering metal values. 4,225,428, Cl. 209-166.000.

Petty, James A., to Wayside Manufacturing Co., Inc. Outdoor grain pit cover. 4,224,770, Cl. 52-82.000.

Petzold, Jurgen: *See—*
Lux, Peter; and Petzold, Jurgen, 4,225,885, Cl. 340-146.3AG.

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Brooks, Julius C.; Pfeifer, Kenneth D.; and Sommerkamp, Robert M., 4,225,302, Cl. 425-438.000.

Pfeifer, Rolf; and Wimmer, Jorn, to Siemens Aktiengesellschaft. Touch contact. 4,225,766, Cl. 200-314.000.

Pfizer Inc.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,225,674, Cl. 435-122.000.

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Rothman, Ulf S. E.; and Jacobsson, Sten A. L., 4,225,580, Cl. 424-78.000.

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Phillips, James C.: *See—*
Boyd, Gary D.; Lemons, Ross A.; Phillips, James C.; Remeika, Joseph P.; and Spencer, Edward G., 4,225,216, Cl. 350-357.000.

Phillips, Paul J.: *See—*
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Phillips Petroleum Company: *See—*
Bailey, Dunn M.; and Harper, Ernest A., deceased, 4,225,329, Cl. 62-24.000.
Chapman, Charles C.; and Hann, Paul D., 4,225,740, Cl. 585-719.000.
Chapman, Charles C.; and Hann, Paul D., 4,225,741, Cl. 585-719.000.
Cheng, Paul J., 4,225,570, Cl. 423-456.000.
Cobb, Raymond L., 4,225,505, Cl. 260-346.300.
Dziewulski, Ted; and Kay, Arthur H., 4,224,764, Cl. 47-71.000.
Hutson, Thomas, Jr., 4,225,742, Cl. 585-723.000.
Myers, John W., 4,225,419, Cl. 208-135.000.
Thomas, Stephen P., 4,225,319, Cl. 44-72.000.

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Timm, Thies; and Hartwig, Claus, 4,225,683, Cl. 525-126.000.
Piasio, Roger N.; Perry, David A.; and Nayak, Pangal N., to Ventrex Laboratories, Inc. Method and apparatus for performing in vitro clinical diagnostic tests using a solid phase assay system. 4,225,575, Cl. 424-1.000.
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Pierre, Bernard; Eyraud, Ivan; and Gaubert, Jean, to Les Cables de Lyon. Sealed power cable. 4,225,749, Cl. 174-107.000.
Pierre Fabre, S.A.: *See—*
Tarayre, Jean-Pierre; Cousse, Henri; Mouzin, Gilbert; Lauressergues, Henri; and Casadio, Silvano, 4,225,610, Cl. 424-270.000.
Pilato, Louis A., to Pennock, Villamil and Pilato Inc. Floral foam product and method of producing the same which incorporates a flower preservative and a bacteriocide. 4,225,679, Cl. 521-109.000.
Pines, Richard J.: *See—*
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Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.
Yashiro, Kenji, 4,225,939, Cl. 364-900.000.
Pirelli General Cable Works, Limited: *See—*
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Pissiotas, Georg: *See—*
Fory, Werner; Rempfler, Hermann; Pissiotas, Georg; Rohr, Otto; and Bohner, Beat, 4,225,336, Cl. 71-88.000.
Pitchon, Esra, to General Foods Company. Food extrusion process. 4,225,630, Cl. 426-623.000.
Pitesky, Isadore. Filter holding assembly. 4,225,440, Cl. 210-321.00R.
Pitney Bowes Inc.: *See—*
Russell, John J., Jr., 4,225,660, Cl. 430-108.000.
Pittsburgh-Des Moines Steel Company: *See—*
Hills, Richard E.; and Neely, Derek K., 4,225,055, Cl. 220-452.000.
Pittway Corporation: *See—*
Conforti, Frederick J., 4,225,860, Cl. 340-629.000.
Plessey Handel und Investments AG: *See—*
Lillington, John, 4,225,864, Cl. 343-7.700.
Plessner, Jac A. Universal chuck adaptor. 4,224,969, Cl. 145-53.000.
Plotto, Michel, to Compagnie Internationale pour l'Informatique. Fly off platform for magnetic transducers having means for reducing unstick time. 4,225,891, Cl. 360-103.000.
Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes: *See—*
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Poidomani, Placido: *See—*
Gardini, Gian P.; Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, 4,225,714, Cl. 544-377.000.
Pokhodnya, Igor K.; Ananin, Vladimir P.; Golovko, Vladimir N.; and Denisov, Sergei I. Cored electrode. 4,225,773, Cl. 219-146.300.
Polaroid Corporation: *See—*
Douglas, Lawrence M., 4,225,220, Cl. 354-86.000.
Pollak, Mirko, to Tobler S.A. Mechanism for transforming a translation movement into a rotation movement followed by a translation movement, and applications of the mechanism. 4,225,124, Cl. 269-234.000.
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Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.
Polythetics, Inc.: *See—*
Colpitts, Ralph W.; and Wendt, Jens H., 4,225,696, Cl. 528-76.000.
Polz, Harald: *See—*
Binder, Klaus; Charzinski, Peter; Hiereth, Hermann; and Polz, Harald, 4,224,902, Cl. 123-280.000.
Ponsinet, Gerard: *See—*
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,225,589, Cl. 424-180.000.
Poran, Michael: *See—*
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Portal, Guy: *See—*
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Porter, Marion G., to Honeywell Information Systems Inc. Command queue apparatus included within a cache unit for facilitating command sequencing. 4,225,922, Cl. 364-200.000.
Post Office, The: *See—*
Jackson, Lynden A.; and Bates, Roger J., 4,224,787, Cl. 57-15.000.
Potoski, John R.: *See—*
Freed, Meier E.; and Potoski, John R., 4,225,713, Cl. 544-346.000.
Potts, Susan P.: *See—*
Gallop, John C.; and Potts, Susan P., 4,225,818, Cl. 324-302.000.
Powell, James E., to Shell Oil Company. Heterocyclic-substituted cyclopropanecarboxylate pesticides. 4,225,612, Cl. 424-274.000.
PPG Industries, Inc.: *See—*
Cook, James A., Jr., 4,225,518, Cl. 568-937.000.
Cox, Jerry W.; and Wilkes, Mulkey C., 4,225,394, Cl. 203-37.000.
Dahlberg, John R.; and DeTorre, Robert P., 4,225,070, Cl. 225-2.000.
Frank, Robert G., 4,225,333, Cl. 65-348.000.
Lastik, Joseph P., 4,225,043, Cl. 206-448.000.
Patil, Pandit G., 4,224,927, Cl. 126-449.000.
Reinhardt, Arthur E., III, 4,225,519, Cl. 260-654.00D.
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,225,480, Cl. 260-29.6NR.
Praitoni, Alberto: *See—*
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Prescher, Dietrich: *See—*
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Presswood, Eiland K., to Textron, Inc. Bearing mount. 4,225,198, Cl. 308-37.000.
Price, Douglas R.; Dalessio, Frederick F.; and Jones, Phillip H., to Atlantic Development Company. Method of and apparatus for navigating unmarked channels. 4,225,949, Cl. 367-96.000.
Price, William M.; and Nott, Alan J., to Anglo-American Clays Corporation. Method for separating metallic minerals utilizing magnetic seeding. 4,225,425, Cl. 209-5.000.
Price, William M.; and Nott, Alan J., to Anglo-American Clays Corporation. Magnetic beneficiation of clays utilizing magnetic particulates. 4,225,426, Cl. 209-5.000.
Prindle, William A., to Viking Glass Company. Vase, horticultural display and method of preparing a horticultural display. 4,224,763, Cl. 47-41.110.
Prinz, Gary A., to United States of America, Navy. Magneto-optic bias of ring laser using reflective magneto-optic element at near-grazing incidence. 4,225,239, Cl. 356-350.000.
Prochazka, Svante; Greskovich, Charles D.; Charles, Richard J.; and Giddings, Robert A., to General Electric Company. Sintering of silicon nitride using Be additive. 4,225,356, Cl. 106-73.500.
Procter, Donald: *See—*
Rawlings, Robert M.; and Procter, Donald, 4,225,620, Cl. 426-2.000.
Procter & Gamble Company, The: *See—*
Kearney, Donald R.; Trokhan, Paul D.; and Wells, Edward R., 4,225,382, Cl. 162-111.000.
Procton, Jerome C., to Endura Products, Inc. Threshold with flexible insulator. 4,224,766, Cl. 49-468.000.
Prohaska, Hans; and Theurer, Karl-Heinz, to ITT Industries, Inc. Electromotive power brake. 4,224,832, Cl. 74-388.00R.
Prosperi, Alberto: *See—*
Hummel, Walter; Klinke, Gregor; and Prosperi, Alberto, 4,225,326, Cl. 55-257.00R.
Prueher, Andrew B.: *See—*
Hennessy, Michael P.; Prueher, Andrew B.; and Wagner, Paul E., 4,225,174, Cl. 294-113.000.
Puchinger, Herwig; Mueller, Ulrich; and Sernetz, Manfred, to Battelle-Institut e.V. Process for the in-vitro biosynthesis of hormones, especially insulin. 4,225,671, Cl. 435-71.000.
Puechavy, Daniel, to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes. Flexible hoses. 4,225,158, Cl. 285-47.000.
Pugh, Timothy G.: *See—*
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Pullman Incorporated: *See—*
Hogue, J. W.; Horner, B. Dean; and Foster, Dudley, 4,224,880, Cl. 105-422.000.
Knippel, Willis H.; and Schmitz, Thomas R., 4,224,875, Cl. 104-130.000.
Marsden, Dennis B., 4,224,878, Cl. 105-253.000.
Stark, Marvin; Schultz, Ronald G.; and Spychalski, Robert A., 4,224,877, Cl. 105-250.000.
Quad Corporation: *See—*
deVries, Egbert, 4,225,566, Cl. 423-210.000.
Quick, Leonard M.: *See—*
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Rabowsky, Hans: *See—*
Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, 4,225,347, Cl. 75-257.000.
Rabus, Friedrich; and Grob, Ferdinand, to Robert Bosch GmbH. Gear shifting engagement shock control system. 4,224,842, Cl. 74-866.000.
Ragan, Randall C., to North American Philips Corporation. Open frame single turn potentiometer with helical coil spring wiper and resilient member. 4,225,845, Cl. 338-174.000.
Raggenbass, Werner; and Zwar, Kurt, to BBC Brown, Boveri & Company, Limited. System for monitoring the validity of electrical data fed to a number of n functionally parallel-connected data channels. 4,225,961, Cl. 371-36.000.
Rahuel, Jean-Claude; and Dagnelie, Jean-Paul. Graphics table particularly for a telewriting system. 4,225,750, Cl. 178-19.000.
Raimondi, Armando: *See—*
Gardini, Gian P.; Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, 4,225,714, Cl. 544-377.000.
Ralston Purina Company: *See—*
Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., 4,225,621, Cl. 426-2.000.
Ramari, Luigi. Collapsible, flattenable and drum wrappable type of radio antenna, particularly for motor-vehicles and moving equipments. 4,225,871, Cl. 343-877.000.
Ramer Test Tools, Inc.: *See—*
Van Meter, Homer, 4,225,159, Cl. 285-104.000.

Rando, Joseph F.: *See*—
Davidson, Richard W.; Rando, Joseph F.; and Teach, Ted L., 4,225,226, Cl. 356-1.000.
Rank Organisation Limited, The: *See*—
Klimek, Norbert M.; and Huber, Manfred A., 4,225,251, Cl. 400-124.000.
Rao, Dhanvada M.: *See*—
United States of America, National Aeronautics and Space Administration; and Rao, Dhanvada M., 4,225,102, Cl. 244-130.000.
Rao, V. Durga Nageswar, to Ford Motor Company. Crystalline additive for magnesium alumina silicate. 4,225,354, Cl. 106-39.800.
Rapson, John E. Containment of pressurized fluid jets. 4,224,985, Cl. 166-57.000.
Rasek, Eduard: *See*—
Henkler, Herbert; Gehrung, Manfred; and Rasek, Eduard, 4,225,098, Cl. 242-192.000.
Rawlings, Robert M.; and Procter, Donald, to Blue Wing Corporation. Method for feeding ruminant animals. 4,225,620, Cl. 426-2.000.
Rayner, Adrien P.; Messenger, John D.; and Green, James T., to Metal Box Limited. Containers. 4,225,045, Cl. 206-508.000.
Raytheon Company: *See*—
Ciccio, Joseph A.; Thun, Rudolf E.; and Fardy, Harry J., 4,225,900, Cl. 361-395.000.
RCA Corporation: *See*—
Ipri, Alfred C., 4,225,875, Cl. 357-23.000.
Kaplan, Leonard A., 4,225,897, Cl. 361-87.000.
Martinelli, Ramon U., 4,225,874, Cl. 357-13.000.
Sandercock, John R., 4,225,236, Cl. 356-346.000.
Schade, Otto H., Jr., 4,225,816, Cl. 323-4.000.
Torrington, Leslie A.; and Huff, Larry D., 4,225,141, Cl. 274-9.00B.
Rea, James H.: *See*—
Karim, Khalid A.; and Rea, James H., 4,225,550, Cl. 264-236.000.
Readio, Philip D.: *See*—
Allan, John L. H.; Readio, Philip D.; Bengali, Ajay M.; and Zuendt, Richard F., 4,225,350, Cl. 106-14.120.
Zuendt, Richard F.; Bengali, Ajay M.; Readio, Philip D.; and Allan, John L. H., 4,225,351, Cl. 106-14.120.
Recchi, Vincenzo: *See*—
Hazard, Herbert R.; and Recchi, Vincenzo, 4,225,305, Cl. 431-182.000.
Recchia, Frank P.: *See*—
Onder, Kemal B.; and Recchia, Frank P., 4,225,686, Cl. 525-419.000.
Redmar Investors, Inc.: *See*—
Erb, Robert A., 4,225,640, Cl. 428-2.000.
Reeves, Max D. Glass cutter for fracturing prescored glass. 4,225,072, Cl. 225-104.000.
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Lewis, Owen; Refermat, Stanley; and Almquist, Thomas A., 4,225,826, Cl. 330-4.300.
Regie Nationale des Usines Renault: *See*—
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Regnier, Jean: *See*—
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Reibling, Robert: *See*—
Scholz, Charles F.; and Reibling, Robert, 4,225,909, Cl. 362-367.000.
Reiling, Joseph W., to Reiling, Joseph William. Sexual stabilizer and stimulator. 4,224,933, Cl. 128-79.000.
Reiling, Joseph William: *See*—
Reiling, Joseph W., 4,224,933, Cl. 128-79.000.
Reinhardt, Arthur E., III, to PPG Industries, Inc. Dehydrochlorination process. 4,225,519, Cl. 260-654.00D.
Reinhart, Douglas M., to Segen Industries, Inc. Tamper-proof bottle caps and method of forming same. 4,225,050, Cl. 215-252.000.
Reisdorf, Daniel: *See*—
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Reiss, Howard, to Occidental Research Corporation. Apparatus for separating neutral molecules using a bipolar membrane as a molecular sieve. 4,225,412, Cl. 204-301.000.
Remeika, Joseph P.: *See*—
Boyd, Gary D.; Lemons, Ross A.; Phillips, James C.; Remeika, Joseph P.; and Spencer, Edward G., 4,225,216, Cl. 350-357.000.
Rempfler, Hermann: *See*—
Fory, Werner; Rempfler, Hermann; Pissiotas, Georg; Rohr, Otto; and Bohner, Beat, 4,225,336, Cl. 71-88.000.
Remy, Joel, to Adret Electronique. Plural phase locked loop frequency synthesizer. 4,225,830, Cl. 331-2.000.
Rengo Co., Ltd.: *See*—
Tokuno, Masateru, 4,224,847, Cl. 83-71.000.
Reschovsky, John M.; and Whipple, Walter, III, to General Electric Company. Self-calibrated subcarrier telemetry system. 4,225,851, Cl. 340-177.0CA.
Reshetnik, Vasily D.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.
Revlon, Inc.: *See*—
Meyerhoefer, Carl E.; and Meyerhoefer, Carl H., 4,224,955, Cl. 132-33.00R.
Rewitzer, Siegfried, to Hoechst Aktiengesellschaft. Process and apparatus for compressing and packaging filament tows. 4,224,780, Cl. 53-436.000.
Reynolds, Gordon S.: *See*—
Johnson, Robert H.; Ford, Dixon A.; Reynolds, Gordon S.; and Sorenson, James L., 4,224,943, Cl. 128-214.400.
Rhodes, Donald E., to Kerr-McGee Corporation. Process for improving soluble coal yield in a coal deashing process. 4,225,420, Cl. 208-177.000.
Rhodes, Maurice: *See*—
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,225,408, Cl. 204-181.00N.
Rhone-Poulenc Industries: *See*—
Anglerot, Didier, 4,225,367, Cl. 148-174.000.
Baudouin, Michel; and Abblard, Jean, 4,225,497, Cl. 260-326.5FM.
Baudouin, Michel; and Abblard, Jean, 4,225,498, Cl. 260-326.260.
Biola, Georges; Komorn, Yves; and Limongi, Eric, 4,225,516, Cl. 568-41.000.
Ducep, Jean-Bernard; Farge, Daniel; Ponsinet, Gerard; and Reisdorf, Daniel, 4,225,589, Cl. 424-180.000.
Leveque, Alain, 4,225,568, Cl. 423-321.00S.
Riat, Henri: *See*—
Hegar, Gert; and Riat, Henri, 4,225,709, Cl. 544-194.000.
Ribka, Joachim: *See*—
Bauer, Wolfgang; and Ribka, Joachim, 4,225,492, Cl. 260-157.000.
Rice, Stuart L., to Caterpillar Tractor Co. Lower bainite alloy steel article and method of making same. 4,225,365, Cl. 148-36.000.
Rich, Thomas C.: *See*—
Perreault, Donald A.; and Rich, Thomas C., 4,225,937, Cl. 364-726.000.
Richardson Company, The: *See*—
Muzyczko, Thaddeus M., 4,225,661, Cl. 430-156.000.
Richardson, Neil G., to Domtar Inc. Process for wood treatment. 4,225,637, Cl. 427-297.000.
Richter, Jorg: *See*—
Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, 4,224,843, Cl. 81-57.380.
Ricoh Company, Ltd.: *See*—
Abe, Michiharu, 4,225,211, Cl. 350-3.820.
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,225,648, Cl. 428-336.000.
Matsuda, Tsutomu; Rimoto, Masanori; and Hayashi, Chihiro, 4,225,662, Cl. 430-173.000.
Riedl, Josef; Frohlich, Walter; and Mittermaier, Erich, to Hoechst Aktiengesellschaft. Process for the manufacture of vinyl chloride. 4,225,520, Cl. 260-656.00R.
Riegger-Dreher, Helena: *See*—
Datz, Rudolf; and Riegger-Dreher, Helena, 4,224,981, Cl. 165-114.000.
Riegler, Ernst; and Schmidt, Manfred, to Voest-Alpine Aktiengesellschaft. Tilting drive arrangement for a converter. 4,224,836, Cl. 74-665.0GC.
Riganati, John P.: *See*—
Chang, Tien-Lin; Kabaian, Jimmy H.; Riganati, John P.; and White, Stanley A., 4,225,850, Cl. 340-146.30E.
Riggs, Darius O.: *See*—
Mohney, Harold F.; and Riggs, Darius O., 4,225,035, Cl. 198-836.000.
Riggs, Olen L., Jr.: *See*—
Graham, Paul R.; and Riggs, Olen L., Jr., 4,225,396, Cl. 204-1.500.
Rilett, John W. Gas-operated motor systems. 4,224,799, Cl. 60-671.000.
Rimoto, Masanori: *See*—
Matsuda, Tsutomu; Rimoto, Masanori; and Hayashi, Chihiro, 4,225,662, Cl. 430-173.000.
Rinaldi, Victor. Semi-submersible vessel having a sealed closed chamber of truncated ovoid shape. 4,224,891, Cl. 114-256.000.
Robert Bosch GmbH: *See*—
Knapp, Heinrich, 4,224,914, Cl. 123-452.000.
Kulke, Gunter; and Eckert, Konrad, 4,225,088, Cl. 239-533.500.
Rabus, Friedrich; and Grob, Ferdinand, 4,224,842, Cl. 74-866.000.
Roberts, John S., to Kling-Tecs, Inc. Apparatus for extruding yarn. 4,225,299, Cl. 425-72.00S.
Roberts, Robert E. Electric lighting system for bicycle wheels. 4,225,848, Cl. 340-134.000.
Roberts, Wallace A. Epilation apparatus. 4,224,944, Cl. 128-303.180.
Robinson, Tibor: *See*—
Acton, Brian; Kissling, Bruno; Robinson, Tibor; and Urosevic, Milica, 4,225,310, Cl. 8-491.000.
Roche, George: *See*—
Neighbor, Larry; and Roche, George, 4,224,860, Cl. 92-100.000.
Rockwell International Corporation: *See*—
Cagle, George C.; and Weeren, Eric K., 4,225,964, Cl. 375-86.000.
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Rockwool International A/S: *See*—
Petersen, Jorgen S., 4,224,774, Cl. 52-404.000.
Roessler, Peter: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; Brandes, Wilhelm; and Roessler, Peter, 4,225,618, Cl. 424-322.000.
Rogers, Robert J.: *See*—
Moore, Edwin C.; Rogers, Robert J.; and Wiechman, Donald G., 4,225,770, Cl. 219-137.00R.
Rohm GmbH: *See*—
Hartl, Roland; Helm, Dieter; and Kraemer, Dieter, 4,225,557, Cl. 422-56.000.

Rohm and Haas Company: *See*—
Hutton, Thomas W.; and Lavelle, Joseph A., 4,225,651, Cl. 428-443.000.
Miller, George A.; Chan, Hak-Foon; and Carley, Harold E., 4,225,723, Cl. 548-341.000.
Rohr, Otto: *See*—
Fory, Werner; Rempfler, Hermann; Pissiotas, Georg; Rohr, Otto; and Bohner, Beat, 4,225,336, Cl. 71-88.000.
Roiret, Michel; Salles, Aime; and Dupitier, Michel, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Apparatus for measuring the optical transmissive power of the atmosphere. 4,225,245, Cl. 356-437.000.
Rolf, Meinhard; Neeff, Rutger; and Muller, Walter, to Bayer Aktiengesellschaft. Heterocyclic azo dyes and pigments containing 4-quinazolinone moieties. 4,225,489, Cl. 260-154.000.
Roman, Michael J., Jr., to General Motors Corporation. Electrical connector for electromagnetic fuel injector. 4,225,206, Cl. 339-91.00R.
Romelli, Pier B.; and Pennisi, Francesco, to Gruppo Lepetit S.p.A. Method for determination of free hormones in biologic fluids. 4,225,574, Cl. 424-1.000.
Rosenbaum, Walter S.: *See*—
Kettler, Howard G.; Kolpek, Robert A.; and Rosenbaum, Walter S., 4,225,249, Cl. 400-3.000.
Rosenberger, Siegfried, to Ciba-Geigy Corporation. Lubricant compositions containing dithiocarbamyl antioxidants. 4,225,450, Cl. 252-47.500.
Rosenkranz, Hans J.: *See*—
Schuster, Karl-Ernst; Rosenkranz, Hans J.; Rudolph, Hans; Fuhr, Karl; Zorn, Bruno; and Traubel, Harro, 4,225,695, Cl. 528-75.000.
Rosin, George C.; and Kulon, Robert E., to McNeil Corporation. Automatic foundry system. 4,224,979, Cl. 164-130.000.
Rosler, Jurgen; and Herrnring, Gunther, to Montblanc-Simplo GmbH. Pen nib with slit for liquid inks. 4,225,256, Cl. 401-209.000.
Rotblum, Yehuda: *See*—
McLoughlin, John; Athanasiades, Neocles; and Rotblum, Yehuda, 4,224,826, Cl. 73-198.000.
Roth, Lanny J.: *See*—
Baker, Joe L.; and Roth, Lanny J., 4,225,283, Cl. 414-723.000.
Roth, Sanford: *See*—
Sitkewich, W. Jorge; and Roth, Sanford, 4,224,820, Cl. 73-6.000.
Rothberg, Robert H., to Exxon Production Research Company. Diverter tool. 4,224,986, Cl. 166-117.500.
Rothbuhr, Lothar; Sroka, Werner; and Fritz, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of high quality carbon black forming material. 4,225,416, Cl. 208-23.000.
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., to Olin Corporation. Use of 1-lower alkoxy-4-trichloromethylphthalazines as an insecticide. 4,225,599, Cl. 424-250.000.
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., to Pharmacia Aktiebolag. Method for cleansing fluid discharging skin surfaces, wounds and mucous membranes and means for carrying out the method. 4,225,580, Cl. 424-78.000.
Rothwell, H. Richard. Subterranean heat exchanger for refrigeration air conditioning equipment. 4,224,805, Cl. 62-260.000.
Rottenkolber, Hans, to Opto Produkte AG. Tire checking apparatus. 4,225,237, Cl. 356-348.000.
Rottenkolber, Hans, to Opto Produkte AG. Tire checking device. 4,225,238, Cl. 356-348.000.
Rotzler GmbH & Co. Spezialfabrik fur Seilwinden und Hebezeuge: *See*—
Frommherz, Egon, 4,225,119, Cl. 254-175.700.
Roushdy, Hesham A.; and Hildebrand, Daniel H., to Ford Motor Company. Four speed ratio automatic transmission with compact gearing. 4,224,838, Cl. 74-688.000.
Rousseau, Alain: *See*—
Morin, Michel; and Rousseau, Alain, 4,224,822, Cl. 73-81.000.
Roy, Joseph N. A.: *See*—
Couture, Joseph E. G.; and Roy, Joseph N. A., 4,225,368, Cl. 149-19.900.
Roy, Santanu, to Thagard, George F., Jr. Foamed polyurethane materials with a bitumen and a hydroxy fatty oil. 4,225,678, Cl. 521-101.000.
Ruben, Philip H. Dental appliance. 4,225,667, Cl. 433-162.000.
Ruberg, Wolfgang: *See*—
Schmider, Paul; and Ruberg, Wolfgang, 4,225,234, Cl. 356-312.000.
Rudolph, Hans: *See*—
Schuster, Karl-Ernst; Rosenkranz, Hans J.; Rudolph, Hans; Fuhr, Karl; Zorn, Bruno; and Traubel, Harro, 4,225,695, Cl. 528-75.000.
Ruegg, Rudolf: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,225,527, Cl. 260-408.000.
Ruf, Gebhard: *See*—
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.
Ruflin, Gerard T.: *See*—
Jeswani, Partab T.; and Ruflin, Gerard T., 4,224,823, Cl. 73-118.000.
Ruhrchemie Aktiengesellschaft: *See*—
Weber, Jurgen; and Grau, Heinz, 4,225,515, Cl. 568-444.000.
Ruotsalainen, Matti K. Diapositive trimmer. 4,224,853, Cl. 83-412.000.
Rusch, Friedrich-Wilhelm; Gartner, Johannes; and Faist, Walter, to Buehler-Miag GmbH. Rolling mill for milling cereals and similar material. 4,225,093, Cl. 241-76.000.
Russell, John J., Jr., to Pitney Bowes Inc. Treated toner carrier and method of making the same. 4,225,660, Cl. 430-108.000.
Rust, Norbert, to Expert Automation, Inc. Mechanical motion control apparatus. 4,224,830, Cl. 74-52.000.
Ruti-Te Strake B.V.: *See*—
Manders, Petrus G. J., 4,224,827, Cl. 73-861.650.
Ryan, Joseph L.: *See*—
Kobs, Frederick E.; Ryan, Joseph L.; Inoshita, Minoru; and Winfrey, Gerald N., 4,225,942, Cl. 364-900.000.
Rysanek, Duson; Kotrc, Bohumir; Hamalcik, Jaroslav; and Olejnik, Peter, to Vyzkumny ustav veterinarniho lekarstvi. Apparatus for diagnosing milk secretion disorders in animals. 4,225,820, Cl. 1324-450.000.
Ryser, Gottlieb: *See*—
Bollag, Werner; Ruegg, Rudolf; and Ryser, Gottlieb, 4,225,527, Cl. 260-408.000.
S.E.G. Resistor AB: *See*—
Soderholm, Arne O., 4,225,002, Cl. 177-255.000.
Sahasrabudhe, Arun P., to Westinghouse Electric Corp. Transit vehicle dynamic brake control apparatus. 4,225,813, Cl. 318-371.000.
Saiki, Atsushi: *See*—
Makino, Daisuke; Miyadera, Yasuo; Harada, Seiki; and Saiki, Atsushi, 4,225,702, Cl. 528-353.000.
Saint-Pierre, Raymond M.; and Danielsen, Berne E., to Mattel, Inc. Animated pull toy. 4,224,759, Cl. 46-105.000.
Saito, Suzuo: *See*—
Hirata, Akio; and Saito, Suzuo, 4,225,914, Cl. 363-160.000.
Saito, Toshihisa; and Inoue, Nobuyoshi, to Copal Company Limited. Cocking mechanism for electric shutters. 4,225,221, Cl. 354-234.000.
Saito, Toshinori: *See*—
Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, 4,225,706, Cl. 544-16.000.
Salenbo, Sten, to Sundpacma Aktiebolag. Apparatus for handling of unsealed slit boxes. 4,224,781, Cl. 53-473.000.
Salles, Aime: *See*—
Roiret, Michel; Salles, Aime; and Dupitier, Michel, 4,225,245, Cl. 356-437.000.
Sample, George A. Upright climbing and platform device. 4,225,013, Cl. 182-134.000.
Samson Aktiengesellschaft, Firma: *See*—
Eysel, Dieter; and Gerk, Wilfried, 4,224,846, Cl. 82-36.00R.
Sanczuk, Stefan; and Hermans, Hubert K. F., to Janssen Pharmaceutica N.V. N-Aryl-N-(1-L-4-piperidinyl)arylacetamides. 4,225,606, Cl. 424-251.000.
Sandberg, Gunivar. Anchor development. 4,224,892, Cl. 114-294.000.
Sandell, Bertil. Method and a device for adding material in an air stream to a nozzle. 4,225,086, Cl. 239-428.000.
Sandercock, John R., to RCA Corporation. Fabry-perot interferometer. 4,225,236, Cl. 356-346.000.
Sanders Associates, Inc.: *See*—
Kuppenheimer, John D., Jr.; and Murphy, Paul F., 4,225,782, Cl. 250-216.000.
Sandler, Louis M., to Emhart Industries, Inc. Crest firing means. 4,225,896, Cl. 361-56.000.
Sandner, Michael R.: *See*—
Trecker, David J.; and Sandner, Michael R., 4,225,513, Cl. 568-397.000.
Sando Iron Works, Co. Ltd.: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,225,309, Cl. 8-148.000.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works, Co. Ltd. Shrinkage setting process for cloth material. 4,225,309, Cl. 8-148.000.
Sandoz Ltd.: *See*—
Acton, Brian; Kissling, Bruno; Robinson, Tibor; and Urosevic, Milica, 4,225,310, Cl. 8-491.000.
Audibert, Alain, 4,225,605, Cl. 424-250.000.
Entschel, Roland; and Henzi, Beat, 4,225,490, Cl. 260-156.000.
Sandquist, Kurt E.: *See*—
Fahlvik, Hans A.; and Sandquist, Kurt E., 4,225,555, Cl. 422-25.000.
Sands, Raymond L., to Chubb & Son's Lock and Safe Company, Limited. Vaults and strongrooms. 4,224,861, Cl. 98-1.500.
Sangamo Weston, Inc.: *See*—
Andreaggi, Joseph R., 4,225,257, Cl. 403-24.000.
Sano, Jyunji; and Okazaki, Kuniaki, to Omron Tateisi Electronics Co. Banking apparatus and method. 4,225,779, Cl. 235-379.000.
Santo, Philip J. Adjustable waterbed mattress support. 4,224,705, Cl. 5-400.000.
Saraceni, Remo, to Novitas, Inc. Selective illumination. 4,225,808, Cl. 315-307.000.
Sarantakis, Dimitrios, to American Home Products Corporation. Truncated somatostatin analogs. 4,225,472, Cl. 260-8.000.
Sardee Corporation, The: *See*—
Sarovich, Steve, 4,225,034, Cl. 198-607.000.
Sargent & Greenleaf, Inc.: *See*—
Bechtiger, Charles G., 4,224,814, Cl. 70-272.000.
Sarovich, Steve, to Sardee Corporation, The. The Container conveying and elevating apparatus. 4,225,034, Cl. 198-607.000.
Sasaki, Seiko; and Asano, Kazuhiro, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 4,224,789, Cl. 368-185.000.

Sasaki, Yutaro: *See*—
Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki, 4,225,673, Cl. 435-101.000.

Sasse, Wolfgang H. F.: *See*—
Grigg, Geoffrey W.; and Sasse, Wolfgang H. F., 4,225,588, Cl. 424-177.000.

Sato, Jun-ichi: *See*—
Kawabuchi, Masami; Sato, Jun-ichi; Nagai, Kiyotaka; Fukukita, Hiroshi; and Fukumoto, Akira, 4,224,829, Cl. 73-626.000.

Sato, Reisuke: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.

Sato, Tomoharu: *See*—
Kadota, Michio; Sato, Tomoharu; and Suzuki, Kenji, 4,224,725, Cl. 29-25.350.

Sato, Toshio: *See*—
Niimi, Yukihisa; Kakuse, Junko; Sato, Toshio; and Kawanaka, Hideo, 4,225,311, Cl. 8-524.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Label strip jam preventing mechanism for hand labeler. 4,224,872, Cl. 101-288.000.

Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Herbicidal phosphonates. 4,225,521, Cl. 260-941.000.

Saunders, Robert M.; and Kohler, George O., to United States of America, Agriculture. Preparation of protein concentrates from whey and seed products. 4,225,629, Cl. 426-583.000.

Saur, Roland; and Kurz, Manfred, to Behr-Thomson Dehnstoffregler GmbH. Temperature-dependent switch. 4,225,841, Cl. 337-393.000.

Sawada, Daisaku: *See*—
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.

SCAL Societe de Conditionnements en Aluminium: *See*—
Guedet, Robert, 4,224,779, Cl. 53-426.000.

Scanlon, Patricia M.: *See*—
Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., 4,225,502, Cl. 260-465.00E.

Scapini, Giancarlo: *See*—
Gardini, Gian P.; Scapini, Giancarlo; Raimondi, Armando; and Poidomani, Placido, 4,225,714, Cl. 544-377.000.

Scarlett, John C.: *See*—
Beggs, Donald; and Scarlett, John C., 4,225,340, Cl. 75-35.000.

Schade, Otto H., Jr., to RCA Corporation. Precision current source. 4,225,816, Cl. 323-4.000.

Schadt, Frank L., III, to Du Pont de Nemours, E. I., and Company. Photographic element in which the antistatic layer is interlinked in the base. 4,225,665, Cl. 430-529.000.

Schafer, Otto: *See*—
Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, 4,224,915, Cl. 123-533.000.

Schafgen, Bernhard: *See*—
Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, 4,225,347, Cl. 75-257.000.

Schalk, Karl: *See*—
Kuhnlein, Hans; Schalk, Karl; and Kogler, Georg, 4,225,811, Cl. 318-261.000.

Scherer, Heribert: *See*—
Bittner, Hans-Joachim; Scherer, Heribert; and Hanses, Hans, 4,225,331, Cl. 65-48.000.

Schering A G: *See*—
Nusslein, Ludwig; and Arndt, Friedrich, 4,225,338, Cl. 71-120.000.

Schering Corporation: *See*—
Finckenor, Lawrence E., 4,225,597, Cl. 424-243.000.
Steinman, Martin; and Tahbaz, Pirouz, 4,225,711, Cl. 544-238.000.

Schetina, Otto: *See*—
Zitz, Alfred; Schetina, Otto; and Kogler, Peter, 4,225,144, Cl. 277-12.000.

Schick, John W.: *See*—
Nipe, Richard N.; Schick, John W.; and Gemmill, Robert M., Jr., 4,225,739, Cl. 585-525.000.

Schick, Lloyd A.: *See*—
Denning, Charles E.; and Schick, Lloyd A., 4,225,576, Cl. 424-1.000.

Schilling, Robert A.: *See*—
Hughes, Horatio, Jr.; and Schilling, Robert A., 4,225,385, Cl. 162-263.000.

Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., to PPG Industries, Inc. Addition interpolymers having improved stability and two-package compositions comprising such interpolymers and polyepoxides. 4,225,480, Cl. 260-29.6NR.

Schindler, Mark. Multiple variable phase control circuit. 4,225,777, Cl. 219-497.000.

Schirrich, Klaus: *See*—
Hars, Christoph; Schirrich, Klaus; Steinmeier, Bodo; and Tappe, Wilfried, 4,224,871, Cl. 101-248.000.

Schlesselman, Harold D.; and Weber, David C., to Bendix Autolite Corporation. Resistance type oxygen sensor. 4,225,842, Cl. 338-34.000.

Schmid, Eduard; and Griehl, Wolfgang, to Inventa AG fur Forschung und Patentverwertung, Zurich. Ternary polyamide filaments. 4,225,699, Cl. 528-324.000.

Schmid, Max, to Hoffmann-La Roche Inc. Process for manufacturing a diketone. 4,225,506, Cl. 260-343.600.

Schmider, Paul; and Ruberg, Wolfgang, to Beckman Instruments GmbH. Method for sampling in flameless atomic absorption spectrophotometry. 4,225,234, Cl. 356-312.000.

Schmidt, Manfred: *See*—
Riegler, Ernst; and Schmidt, Manfred, 4,224,836, Cl. 74-665.0GC.

Schmidt, William T.; and Gammon, Charles T., to Diamond Shamrock Corporation. Water-in-oil emulsion defoamer compositions, their preparation and use. 4,225,456, Cl. 252-321.000.

Schmitt, Frederick L., to International Flavors & Fragrances Inc. Fragrance compositions containing 3-methyl-1-phenyl-pentanol-5 or specific optical isomers thereof and one or more butanoyl cyclohexane derivatives. 4,225,444, Cl. 252-8.600.

Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,225,470, Cl. 252-522.00R.

Schmitz, Thomas R.: *See*—
Knippel, Willis H.; and Schmitz, Thomas R., 4,224,875, Cl. 104-130.000.

Schnabel, Ernst. Tubular element for passing flowable media. 4,224,961, Cl. 137-375.000.

Schneider, Abraham: *See*—
Hall, Lewis W., Jr.; Tice, John D.; Myers, Harry K., Jr.; and Schneider, Abraham, 4,225,735, Cl. 585-360.000.

Schneider, Gordon L. Acidic earthen cemented compositions for building materials and process. 4,225,359, Cl. 106-93.000.

Schnell, Hans, to Escher Wyss GmbH. Sorting apparatus for a stock suspension obtained from waste paper. 4,225,427, Cl. 209-44.100.

Schnell, William J.: *See*—
Miller, Jimmy L.; and Schnell, William J., 4,225,438, Cl. 210-321.00B.

Schoeck, Donald I.: *See*—
Hanagan, Michael W.; and Schoeck, Donald I., 4,225,183, Cl. 297-417.000.

Schoemann, George J.; and Schoemann, Robert. Snow lifting device. 4,224,751, Cl. 37-53.000.

Schoemann, Robert: *See*—
Schoemann, George J.; and Schoemann, Robert, 4,224,751, Cl. 37-53.000.

Schoettle, Klaus; Lewin, Helmut; Hoffmann, Werner; Dobler, Peter; and Gliniorz, Lothar, to BASF Aktiengesellschaft. Tape transport mechanism. 4,225,099, Cl. 242-192.000.

Scholten, Joseph J. F.; and van de Leemput, Lambertus J. M. A., to Stamicarbon, B.V. Process of preparing a porous, pure silica. 4,225,464, Cl. 252-458.000.

Scholz, Charles F.; and Reibling, Robert, to Whiteway Manufacturing Co. Lighting fixture. 4,225,909, Cl. 362-367.000.

Schroeder, Hansjuergen A.: *See*—
Rothgery, Eugene F.; and Schroeder, Hansjuergen A., 4,225,599, Cl. 424-250.000.

Schroeder, Hartmut R.: *See*—
Buckler, Robert T.; and Schroeder, Hartmut R., 4,225,485, Cl. 260-112.00B.

Schuller, Walter H., to FDS Fast Digital Systems S.A. of Thonex. Serial access memory device. 4,225,948, Cl. 365-239.000.

Schultz, Ronald G.: *See*—
Stark, Marvin; Schultz, Ronald G.; and Spychalski, Robert A., 4,224,877, Cl. 105-250.000.

Schulz, Helmut W., to Dynecology Incorporated. Briquette comprising caking coal and municipal solid waste. 4,225,457, Cl. 252-373.000.

Schulze, Jurgen: *See*—
Dietrich, Peter; Engler, Gunter; Ferse, Armin; Grimm, Harald, deceased; Gross, Udo; Handte, Dietmar; Lunkwitz, Klaus; Muller, Ulrich; Prescher, Dietrich; and Schulze, Jurgen, 4,225,404, Cl. 204-163.00R.

Schungel, Peter: *See*—
Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, 4,224,843, Cl. 81-57.380.

Schuster, Karl-Ernst; Rosenkranz, Hans J.; Rudolph, Hans; Fuhr, Karl; Zorn, Bruno; and Traubel, Harro, to Bayer Aktiengesellschaft. Radiation-hardenable binders based on thio-polyols. 4,225,695, Cl. 528-75.000.

Schutt, Gerhard: *See*—
Grundei, Hans; Henssge, Joachim; and Schutt, Gerhard, 4,224,695, Cl. 3-1.910.

Schutt & Grundei GmbH: *See*—
Grundei, Hans; Henssge, Joachim; and Schutt, Gerhard, 4,224,695, Cl. 3-1.910.

Schwanz, Wilfried: *See*—
Seiffert, Ulrich; and Schwanz, Wilfried, 4,225,155, Cl. 280-804.000.

Schwartz, Sidney J.; and Hsin, Chung H., to Burroughs Corporation. Bubble memory chip organization-folded loop type. 4,225,944, Cl. 365-15.000.

Schwarz, Eric, to Matix AG. Device for indicating fibre length distribution of a fibre sample. 4,225,244, Cl. 356-434.000.

Schwarz, Herbert: *See*—
Krall, Hermann D.; and Schwarz, Herbert, 4,225,510, Cl. 260-566.00D.

Schwefel, Ernst, to Dr. Johannes Heidenhain GmbH. Interpolation apparatus for digital electronic position measuring instrument. 4,225,931, Cl. 364-577.000.

Schworer, Hans, to Hans Schworer KG. Large area wall element of lightweight sandwich design for prefabricated buildings. 4,224,773, Cl. 52-315.000.

Scott, F. Brantley; and Burton, John H., to American Medical Systems, Inc. Medical prosthetic pull valve and system for using same. 4,224,934, Cl. 128-79.000.

Scott, Norman R.; and Marshall, Rick, to Cornell Research Foundation, Inc. Method and electrical resistance probe for detection of estrus in bovine. 4,224,949, Cl. 128-734.000.

Security Plastics, Inc.: *See*—
Kutik, Louis F.; and Cecil, Howard E., 4,225,060, Cl. 222-189.000.

Segen Industries, Inc.: *See*—
Reinhart, Douglas M., 4,225,050, Cl. 215-252.000.

Seifahrt, Horst, to Castolin S.A. Coated electrode suitable for the welding of gray cast iron parts. 4,225,768, Cl. 219-76.140.

Seiffert, Ulrich; and Schwanz, Wilfried, to Volkswagenwerk Aktiengesellschaft. Passive safety device for securing occupants of vehicles, in particular motor vehicles. 4,225,155, Cl. 280-804.000.

Seiner, Jerome A.: *See*—
Schimmel, Karl F.; Christenson, Roger M.; Seiner, Jerome A.; and Claar, James A., 4,225,480, Cl. 260-29.6NR.

Seipos, Andrew G., to Automated Building Components, Inc. Caster assembly. 4,224,714, Cl. 16-29.000.

Seipos, Andrew G.: *See*—
Jureit, J. Calvin; Seipos, Andrew G.; and Langevin, William J., 4,225,095, Cl. 242-1.000.

Seitz, Alfred, to U.S. Philips Corporation. Multiple speed stroboscope device. 4,225,227, Cl. 356-23.000.

Seki, Kenji: *See*—
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,225,648, Cl. 428-336.000.

Seki, Shigeo; Nishihata, Ken; Nakabayashi, Satoru; Saito, Toshinori; Ikeda, Hitoshi; Itoh, Nobuo; Nakajima, Shokichi; and Fukatsu, Shunzo, to Meiji Seika Kaisha Ltd. Polychalcogen ester of cephem compound, process for preparing the same and method for removing the protective group of the same. 4,225,706, Cl. 544-16.000.

Sekine, Mitsuo; and Yamaguchi, Sizuo, to Citizen Watch Co. Ltd. Frequency adjusting circuit. 4,225,824, Cl. 328-63.000.

Selder, Albertus G.: *See*—
McGuire, Robert C.; Selder, Albertus G.; and Hutchison, Mark A., 4,225,188, Cl. 299-64.000.

Selmeci, Imre: *See*—
Bez, Ulrich; Ruf, Gebhard; Selmeci, Imre; Duwel, Klaus R.; Linge, Herbert; Holzer, Hartmut; Munz, Volker; Hanisch, Wolfgang; and Hauser, Karl, 4,225,153, Cl. 280-788.000.

Semar, J. Lawrence: *See*—
Cramer, Frank B.; and Semar, J. Lawrence, 4,224,948, Cl. 128-690.000.

Senda, Tetsuji: *See*—
Koshiyama, Isamu; and Senda, Tetsuji, 4,225,349, Cl. 106-3.000.

Sentell, John S., to Paseman, Richard R. Method for cleaning the interior of tubes. 4,225,362, Cl. 134-24.000.

Sentoku, Hideshi: *See*—
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,224,777, Cl. 53-641.000.
Miyazaki, Yorizo; Sentoku, Hideshi; and Furuya, Katusuke, 4,224,778, Cl. 53-64.000.

Separate Reality, Inc.: *See*—
Spiegel, Michael S., 4,224,889, Cl. 114-39.000.

Sereda, Peter J.: *See*—
Beaudoin, James J.; and Sereda, Peter J., 4,225,353, Cl. 106-275.000.

Sernetz, Manfred: *See*—
Puchinger, Herwig; Mueller, Ulrich; and Sernetz, Manfred, 4,225,671, Cl. 435-71.000.

Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See*—
Morin, Michel; and Rousseau, Alain, 4,224,822, Cl. 73-81.000.

Seth, Kishankumar K., to Ethyl Corporation. Process for producing overbased alkaline earth hydrocarbyl sulfonates. 4,225,509, Cl. 260-505.00N.

Sevcik, Bohumil: *See*—
Hebky, Jaromir; Lupinek, Vladimir; Sova, Milan; Sevcik, Bohumil; and Broz, Jiri, 4,225,604, Cl. 424-250.000.

Seyfried, Christoph: *See*—
Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.

Sgaslik, Friedrich; and Nalaskowski, Detlef, to Luftechnik Bayreuth Ruskamp GmbH. Filter for purification of gases. 4,225,327, Cl. 55-324.000.

Shafranovsky, Alexandr V.; Olevsky, Viktor M.; Chubukov, Vladimir K.; and Baskov, Jury A. Rotor film mass and heat exchanger. 4,225,538, Cl. 261-92.000.

Shah, Himanshu G.: *See*—
Doty, Charles R., Jr.; Muehldorf, Eugen I.; and Shah, Himanshu G., 4,225,957, Cl. 371-15.000.

Shapiro, Jonathan S.; and Holland, William P., to Machlett Laboratories, Inc., The. X-ray tube control system. 4,225,787, Cl. 250-406.000.

Sharp Kabushiki Kaisha: *See*—
Hatanaka, Takayoshi; Yakushiji, Tsuguharu; and Tanaka, Kanji, 4,225,767, Cl. 219-10.55F.
Ise, Masahiro; Inazaki, Kenzo; Machino, Katsuyuki; and Suzuki, Chuji, 4,225,807, Cl. 315-169.300.
Miyata, Etsutaro; and Tonomura, Toshiya, 4,224,984, Cl. 165-184.000.
Takenaka, Takashi; Maegawa, Masaaki; and Nakanishi, Tosaku, 4,225,890, Cl. 360-72.100.

Shell Oil Company: *See*—
Kollmeyer, Willy D., 4,225,499, Cl. 260-326.620.
Powell, James E., 4,225,612, Cl. 424-274.000.
Tieman, Charles H., 4,225,603, Cl. 424-246.000.

Shen, Ming-Shing; and Yang, Ralph T., to United States of America, Energy. Catalytic iron oxide for lime regeneration in carbonaceous fuel combustion. 4,225,572, Cl. 423-638.000.

Sherliker, Francis R.: *See*—
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,225,408, Cl. 204-181.00N.

Sherwin-Williams Company, The: *See*—
Lawlor, Christopher, 4,225,087, Cl. 239-526.000.

Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Oscarson, John R.; Huang, Liang H.; Shibakawa, Riichiro; and Tone, Junsuke, 4,225,674, Cl. 435-122.000.

Shichijo, Hajime; and Miyasaka, Yutaka, to Sony Corporation. Tuning apparatus for providing tuning indication. 4,225,971, Cl. 455-155.000.

Shida, Toshiro: *See*—
Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, 4,225,585, Cl. 424-114.000.

Shigematu, Takashi: *See*—
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.

Shimanuki, Senji: *See*—
Inomata, Koichiro; Shimanuki, Senji; and Hasegawa, Michio, 4,225,339, Cl. 75-122.000.

Shimazu, Jyoji: *See*—
Hirano, Reiji; Mochizuki, Koichi; Yasui, Tokio; and Shimazu, Jyoji, 4,225,932, Cl. 364-710.000.

Shimizu, Ichiro, to Canon Kabushiki Kaisha. Camera with autofocusing device. 4,225,219, Cl. 354-25.000.

Shimizu, Kazuma; Kariyama, Shiso; Takeda, Yoshimitsu; and Yoshimura, Masato, to Toyo Kogyo Co., Ltd. Gas seal means for rotary piston engines. 4,225,295, Cl. 418-142.000.

Shimizu, Kunio: *See*—
Fulukawa, Takumi; Hanzawa, Hisashi; and Shimizu, Kunio, 4,225,894, Cl. 360-137.000.

Shindo, Minoru: *See*—
Ochi, Kiyoshige; Matsunaga, Isao; Shindo, Minoru; and Kaneko, Chikara, 4,225,524, Cl. 260-397.200.

Shingles, Terry: *See*—
Jones, David H.; Shingles, Terry; Kelly, Felix T.; and Dry, Mark E., 4,225,531, Cl. 260-449.60R.

Shinichi, Orii: *See*—
Ishikawa, Masao; and Shinichi, Orii, 4,225,902, Cl. 362-40.000.

Shinn, Robert W.: *See*—
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,225,728, Cl. 560-261.000.

Shinoda, Wataru: *See*—
Makino, Hajime; Shinoda, Wataru; and Yamamura, Kazuhiro, 4,225,352, Cl. 106-14.210.

Shioka, Kazuyuki: *See*—
Kuroki, Masataka; Kono, Sadamitsu; and Shioka, Kazuyuki, 4,225,721, Cl. 548-246.000.

Shiozawa, Kouji: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Okumura, Yoshiharu; and Kaneko, Katsumi, 4,225,727, Cl. 560-244.000.

Shiraga, Ken: *See*—
Toriya, Jun; Shiraga, Ken; Onoda, Takeru; and Ohno, Akihisa, 4,225,729, Cl. 560-263.000.

Shirasaki, Kazuo: *See*—
Fukagai, Kouichi; Higashinaka, Kouichi; and Shirasaki, Kazuo, 4,225,033, Cl. 198-524.000.

Shiratori, Eiichi: *See*—
Miwa, Hirohide; and Shiratori, Eiichi, 4,225,967, Cl. 455-68.000.

Shleizer, Mikhail S.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Shmuilov, Nikolai G.: *See*—
Vaschuk, Valery I.; Starikov, Gennady V.; Solomakha, Gennady P.; Chekhov, Oleg S.; Shmuilov, Nikolai G.; Beilinson, Iosif D.; and Zats, Boris S., 4,225,541, Cl. 261-114.0VT.

Shortte, Willard H., Jr., to Milliken Research Corporation. Tufting machine. 4,224,884, Cl. 112-79.00R.

Showa Denko Kabushiki Kaisha: *See*—
Yoshimura, Ryoichi; Honda, Munetaka; and Hirokawa, Norio, 4,225,348, Cl. 75-257.000.

Shumway, Howard G.: *See*—
Davis, William F.; and Shumway, Howard G., 4,225,854, Cl. 340-347.0AD.

Sidlinger, Bruce C.; Sidlinger, Joanne; and Sidlinger, Bruce D. Portable exercising device for multiple routines. 4,225,131, Cl. 272-109.000.

Sidlinger, Bruce D.: *See*—
Sidlinger, Bruce C.; Sidlinger, Joanne; and Sidlinger, Bruce D., 4,225,131, Cl. 272-109.000.

Sidlinger, Joanne: *See*—
Sidlinger, Bruce C.; Sidlinger, Joanne; and Sidlinger, Bruce D., 4,225,131, Cl. 272-109.000.

Sidorenko, Georgy I.; and Stankevich, Vladimir I. Electronic ergometer. 4,224,952, Cl. 128-782.000.

Siegel, William J.; and Ferguson, Gerald J., Jr., to Pace Incorporated. Circuitry for teaching soldering and practice circuit board for use therewith. 4,224,744, Cl. 35-13.000.

Siemens Aktiengesellschaft: *See—*
Franke, Kurt, 4,225,788, Cl. 250-408.000.
Grune, Horst, 4,225,411, Cl. 204-286.000.
Horninger, Karlheinrich, 4,225,876, Cl. 357-23.000.
Kempter, Karl, 4,225,222, Cl. 355-3.0DR.
Kuhnlein, Hans; Schalk, Karl; and Kogler, Georg, 4,225,811, Cl. 318-261.000.
Lesche, Wolfgang, 4,225,936, Cl. 364-718.000.
Mugele, Kurt; and Nagel, Bodo, 4,225,288, Cl. 417-2.000.
Pfeifer, Rolf; and Wimmer, Jorn, 4,225,766, Cl. 200-314.000.
Vogelsberg, Dieter, 4,224,788, Cl. 57-294.000.
Zuckler, Karl, 4,225,762, Cl. 200-144.00R.

Sieveking, Hans U.: *See—*
von Bittera, Miklos; Sieveking, Hans U.; Stendel, Wilhelm; and Voege, Herbert, 4,225,578, Cl. 424-14.000.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-19-methyl-PGI_2 compounds. 4,225,507, Cl. 260-346.220.

Sih, John C., to Upjohn Company, The. 19-Hydroxy-PGI_2 compounds. 4,225,508, Cl. 260-346.220.

Silkensen, Ralph D.: *See—*
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.

Silver Seiko Co., Ltd.: *See—*
Asahi, Tetsuma, 4,225,252, Cl. 400-161.500.

Simon, William F.; Torrey, William C.; and Hull, Chris W. Personnel locator. 4,225,953, Cl. 367-117.000.

Sinclair, Harold K.: *See—*
Hammer, Clarence F.; and Sinclair, Harold K., 4,225,476, Cl. 260-27.00R.

Sinclair, William Y.; and Argila, Joseph, to Aries Electronics, Inc. Electrical connector for terminating a flat conductor cable. 4,225,205, Cl. 339-59.00M.

Sirrenberg, Wilhelm; Klauke, Erich; Brandes, Wilhelm; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating plant pests with N-(ω-chloro-alkanoyl)-N'-trifluoromethylphenyl-ureas. 4,225,618, Cl. 424-322.000.

Sitkewich, W. Jorge; and Roth, Sanford. Frequency deviation meter for timepieces. 4,224,820, Cl. 73-6.000.

Skaggs, Kenneth R., to Kollectible Kontainer Enterprises Ltd. Container case and blank therefor. 4,225,039, Cl. 206-193.000.

SKF Nova AB: *See—*
Asberg, Sture L., 4,225,263, Cl. 403-326.000.
Nilsson, Sven W., 4,224,831, Cl. 74-89.000.

Skovrinski, Joseph R.: *See—*
Peterson, Dean M.; and Skovrinski, Joseph R., 4,225,558, Cl. 422-72.000.

Small, Edward A., Jr., to Optical Coating Laboratory, Inc. Lighting fixture and glass enclosure having high angle anti-reflection film. 4,225,908, Cl. 362-293.000.

Smith, Alan: *See—*
McCrudden, Joseph E.; and Smith, Alan, 4,225,451, Cl. 252-99.000.

Smith, David L., to Computer Microfilm International Corporation. Film card with reference frame. 4,225,217, Cl. 353-120.000.

Smith, David Vivian: *See—*
de Denus, Robert N., 4,225,571, Cl. 423-561.00A.

Smith, Jackson A. Split flange adapter pad. 4,225,161, Cl. 285-159.000.

Smith, Jennifer May: *See—*
de Denus, Robert N., 4,225,571, Cl. 423-561.00A.

Smith Kline Instruments, Inc.: *See—*
Barrett, M. James, 4,225,784, Cl. 250-303.000.

Smith, Lloyd B., to Bagby, Arthur P., a part interest. Loudspeaker system. 4,225,010, Cl. 181-155.000.

Smith, William V., to Lectrolarm Custom Systems, Inc. Video camera control system. 4,225,886, Cl. 358-210.000.

Smithgall, Harry E.; and Speigel, Kenneth, to GTE Products Corporation. Cathode ray tube getter sealing structure. 4,225,805, Cl. 313-481.000.

Sneider, Vincent R. Expanding syringe with filling valve. 4,225,062, Cl. 222-211.000.

Societe Anonyme Secmafer: *See—*
Boyer, Jean J., 4,225,279, Cl. 414-428.000.

Societe d'Appareillage Electrique Saparel: *See—*
Le Roux, Edouard, 4,225,838, Cl. 335-274.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Launay, Noel, 4,224,895, Cl. 118-16.000.

Societe Europeenne de Propulsion: *See—*
Clebant, Jean C., 4,224,723, Cl. 24-263.00R.

Societe Franco-Americaine de Constructions Atomiques Framatome: *See—*
Bellaiche, Hubert; and Zecevic, Vladimir, 4,225,388, Cl. 176-19.0LD.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (S.N.E.C.M.A.): *See—*
Roiret, Michel; Salles, Aime; and Dupitier, Michel, 4,225,245, Cl. 356-437.000.

Soderholm, Arne O., to S.E.G. Resistor AB. Weigh-bridge resting on load measuring points. 4,225,002, Cl. 177-255.000.

Sogo Pharmaceutical Company, Ltd.: *See—*
Kuroki, Masataka; Kono, Sadamitsu; and Shioka, Kazuyuki, 4,225,721, Cl. 548-246.000.

Solar Unlimited, Inc.: *See—*
Bowden, Donald R., 4,224,926, Cl. 126-448.000.

Solid Photography Inc.: *See—*
DiMatteo, Paul L., 4,225,228, Cl. 356-36.000.

Sollitto, Ronald J.: *See—*
Holberg, Steven E.; and Sollitto, Ronald J., 4,225,254, Cl. 401-119.000.

Solomakha, Gennady P.: *See—*
Vaschuk, Valery I.; Starikov, Gennady V.; Solomakha, Gennady P.; Chekhov, Oleg S.; Shmuilov, Nikolai G.; Beilinson, Iosif D.; and Zats, Boris S., 4,225,541, Cl. 261-114.0VT.

Solow, Terry S. Toothbrush for the whole mouth. 4,224,710, Cl. 15-22.00R.

Somerville, Francis S., to Northern Border Pipeline Company. Crack arrestor. 4,224,966, Cl. 138-172.000.

Sommerkamp, Robert M.: *See—*
Brooks, Julius C.; Pfeifer, Kenneth D.; and Sommerkamp, Robert M., 4,225,302, Cl. 425-438.000.

Somov, Vsevolod S.: *See—*
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

Song, John S. Plant culture container. 4,224,765, Cl. 47-85.000.

Sony Corporation: *See—*
Fulukawa, Takumi; Hanzawa, Hisashi; and Shimizu, Kunio, 4,225,894, Cl. 360-137.000.
Ogawa, Seiichi; Ohgawara, Yoshiaki; and Ohtsuka, Kenichi, 4,225,809, Cl. 315-371.000.
Shichijo, Hajime; and Miyasaka, Yutaka, 4,225,971, Cl. 455-155.000.
Sugawara, Kokichi, 4,225,100, Cl. 242-198.000.

Sorenson, James L.: *See—*
Johnson, Robert H.; Ford, Dixon A.; Reynolds, Gordon S.; and Sorenson, James L., 4,224,943, Cl. 128-214.400.

Sorenson Research Co., Inc.: *See—*
Johnson, Robert H.; Ford, Dixon A.; Reynolds, Gordon S.; and Sorenson, James L., 4,224,943, Cl. 128-214.400.

Sortex North America, Inc.: *See—*
Lane, Marvin M., 4,225,242, Cl. 356-407.000.

Sotiriou, George. Ground detecting device. 4,225,899, Cl. 361-188.000.

Sourgens, Jacques: *See—*
Bernard, Solange; Lajotte, Dominique; Michelon, Francois; and Sourgens, Jacques, 4,225,754, Cl. 179-81.00B.

Southern Railway Company: *See—*
Larsen, Glen D., 4,224,876, Cl. 105-199.00C.

Sova, Milan: *See—*
Hebky, Jaromir; Lupinek, Vladimir; Sova, Milan; Sevcik, Bohumil; and Broz, Jiri, 4,225,604, Cl. 424-250.000.

Sowa, Armin; and Munding, German, to Messerschmitt-Bolkow-Blohm GmbH. Method and apparatus for extracting crude oil from previously tapped deposits. 4,224,991, Cl. 166-272.000.

Spadea, Gregorio, to Fujitsu Limited. Ion implantation method. 4,224,733, Cl. 29-571.000.

Spang Industries, Inc.: *See—*
Bailey, Dennis, 4,225,134, Cl. 273-127.00R.
Bailey, Dennis, 4,225,135, Cl. 273-129.00P.

Sparks, John W.: *See—*
Bader, Henry; and Sparks, John W., 4,225,705, Cl. 542-452.000.

Spectra-Physics, Inc.: *See—*
Davidson, Richard W.; Rando, Joseph F.; and Teach, Ted L., 4,225,226, Cl. 356-1.000.

Speigel, Kenneth: *See—*
Smithgall, Harry E.; and Speigel, Kenneth, 4,225,805, Cl. 313-481.000.

Speiser, Peter P.: *See—*
Kreuter, Jorg; and Speiser, Peter P., 4,225,581, Cl. 424-88.000.

Speiser, Peter Paul: *See—*
Kreuter, Jorg; and Speiser, Peter P., 4,225,581, Cl. 424-88.000.

Spencer, Billie M.: *See—*
Zscheile, John W., Jr.; and Spencer, Billie M., 4,225,935, Cl. 364-717.000.

Spencer, Edward G.: *See—*
Boyd, Gary D.; Lemons, Ross A.; Phillips, James C.; Remeika, Joseph P.; and Spencer, Edward G., 4,225,216, Cl. 350-357.000.

Sperry Corporation: *See—*
Zscheile, John W., Jr.; and Spencer, Billie M., 4,225,935, Cl. 364-717.000.

Sphere Investments Limited: *See—*
Stone, Alan M., 4,225,089, Cl. 239-562.000.

Spicer, Dalton H.: *See—*
Kirkpatrick, Kenneth L.; Spicer, Dalton H.; and Oka, Ken K., 4,224,783, Cl. 56-13.500.

Spiegel, Michael S., to Separate Reality, Inc. Multihull sailing craft and hull structure therefor. 4,224,889, Cl. 114-39.000.

Spierings, Ferdinand H. F. G. Method of making a line-shaped opening in a coating on a plastics foil. 4,225,633, Cl. 427-96.000.

SPOFA, spojene podniky prop farmaceutickou vyrobu: *See—*
Hebky, Jaromir; Lupinek, Vladimir; Sova, Milan; Sevcik, Bohumil; and Broz, Jiri, 4,225,604, Cl. 424-250.000.

Sprague Electric Company: *See—*
Miles, Steven W.; and Emerald, Paul R., 4,225,877, Cl. 357-41.000.

Spranger, Kurt, to Gambro Dialysatoren GmbH & Co. KG. Apparatus for selective separation of matter through semi-permeable membranes. 4,225,439, Cl. 210-321.00R.

Spransy, George B.: *See—*
Braun, Morris; and Spransy, George B., 4,225,255, Cl. 401-137.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances

Inc. Cyclohexane alkyl carbinol perfume compositions. 4,225,470, Cl. 252-522.00R.

Spychalski, Robert A.: *See—*
Stark, Marvin; Schultz, Ronald G.; and Spychalski, Robert A., 4,224,877, Cl. 105-250.000.

SRI International: *See—*
Wolfe, James F.; and Loo, Bock H., 4,225,700, Cl. 528-337.000.

Sroka, Werner: *See—*
Rothbuhr, Lothar; Sroka, Werner; and Fritz, Walter, 4,225,416, Cl. 208-23.000.

Staaf, Per O.: *See—*
Edblom, Karl G.; Nordin, Kenneth I.; Staaf, Per O.; Stenberg, Erik G.; Strand, Nils-Erik; and Svensson, Bo L. H., 4,225,386, Cl. 162-343.000.

Stahl, Michael L. Device for use in bleaching or coloring hair in discrete portions for artistic effect. 4,224,954, Cl. 132-7.000.

Stahle, Kurt, to Concordia Fluidtechnik GmbH. Flow-control valve. 4,224,963, Cl. 137-897.000.

Stahle, Kurt, to Corcordia Fluidtechnik GmbH. Solenoid valve. 4,225,111, Cl. 251-87.000.

Stamicarbon, B.V.: *See—*
Scholten, Joseph J. F.; and van de Leemput, Lambertus J. M. A., 4,225,464, Cl. 252-458.000.

Stanadyne, Inc.: *See—*
Bouwkamp, Gerald R.; Davis, Charles W.; Gilbert, Wesley B.; and Donahue, Charles J., 4,225,291, Cl. 417-214.000.
Davis, Charles W., 4,224,916, Cl. 123-502.000.

Standard Oil Company (Indiana): *See—*
Hensley, Albert L., Jr.; and Quick, Leonard M., 4,225,421, Cl. 208-216.0PP.

Standard Oil Company (Ohio): *See—*
Bremer, Noel J., 4,225,465, Cl. 252-435.000.

Standun, Inc.: *See—*
Kaminskas, Rimvydas A., 4,224,819, Cl. 72-345.000.

Stankevich, Vladimir I.: *See—*
Sidorenko, Georgy I.; and Stankevich, Vladimir I., 4,224,952, Cl. 128-782.000.

Starikov, Gennady V.: *See—*
Vaschuk, Valery I.; Starikov, Gennady V.; Solomakha, Gennady P.; Chekhov, Oleg S.; Shmuilov, Nikolai G.; Beilinson, Iosif D.; and Zats, Boris S., 4,225,541, Cl. 261-114.0VT.

Stark, Marvin; Schultz, Ronald G.; and Spychalski, Robert A., to Pullman Incorporated. Railway hopper car closure actuating mechanism. 4,224,877, Cl. 105-250.000.

Stauffer Chemical Company: *See—*
Fancher, Llewellyn W., 4,225,595, Cl. 424-200.000.
Weil, Edward D., 4,225,522, Cl. 260-978.000.

Stawarz, Dick A.: *See—*
Jones, Samuel H.; and Stawarz, Dick A., 4,224,818, Cl. 72-284.000.

Steffen, David E., to Dickey-john Corporation. Planter population monitor. 4,225,930, Cl. 364-555.000.

Steier, Klaus, to Babcock Krauss-Maffei Industrieanlagen GmbH. Method of and apparatus for the milling of solids. 4,225,091, Cl. 241-24.000.

Steinkamp, Robert A.: *See—*
van Brederode, Robert A.; and Steinkamp, Robert A., 4,225,650, Cl. 428-405.000.

Steinke, Walter A., to United States of America, Army. Non-spill gas-liquid contact unit. 4,224,828, Cl. 73-421.50R.

Steinman, Martin; and Tahbaz, Pirouz, to Schering Corporation. Substituted 2-[(methylsulfinyl)acetyl]-3-heterocyclicindoles and their use as immunosuppressants. 4,225,711, Cl. 544-238.000.

Steinmeier, Bodo: *See—*
Hars, Christoph; Schirrich, Klaus; Steinmeier, Bodo; and Tappe, Wilfried, 4,224,871, Cl. 101-248.000.

Stenberg, Erik G.: *See—*
Edblom, Karl G.; Nordin, Kenneth I.; Staaf, Per O.; Stenberg, Erik G.; Strand, Nils-Erik; and Svensson, Bo L. H., 4,225,386, Cl. 162-343.000.

Stendel, Joachim: *See—*
Diskowski, Herbert; Ebert, Hans; Kern, Winfried; Rabowsky, Hans; Schafgen, Bernhard; and Stendel, Joachim, 4,225,347, Cl. 75-257.000.

Stendel, Wilhelm: *See—*
Maurer, Fritz; Hammann, Ingeborg; Behrenz, Wolfgang; Homeyer, Bernhard; and Stendel, Wilhelm, 4,225,594, Cl. 424-200.000.
von Bittera, Miklos; Sieveking, Hans U.; Stendel, Wilhelm; and Voege, Herbert, 4,225,578, Cl. 424-14.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Opalka, Chester J., Jr., 4,225,601, Cl. 424-263.000.
Lesher, George Y.; and Opalka, Chester J., Jr., 4,225,715, Cl. 546-257.000.

Steving, Gerald: *See—*
Bassett, Roger D.; Daughenbaugh, Gerald A.; Fields, Davis S., Jr.; McCormick, Wayne; Polleys, Rhodes W.; Silkensen, Ralph D.; and Steving, Gerald, 4,225,892, Cl. 360-113.000.

Stiehl, Hans-Henrich, to Delbag-Luftfilter GmbH. Exchangeable filter element. 4,225,328, Cl. 55-378.000.

Stiel, Leonard I.; Allen, Robert A.; and Murphy, Kevin P., to Allied Chemical Corporation. Method for converting heat energy to mechanical energy with monochlorotetrafluoroethane. 4,224,795, Cl. 60-651.000.

Stiel, Leonard I.; and Li, Chien C., to Allied Chemical Corporation. Method for converting heat energy to mechanical energy with 1,2-dichloro-1,1-difluoroethane. 4,224,796, Cl. 60-651.000.

Stivala, Oscar G. Hyperbaric treatment apparatus. 4,224,941, Cl. 128-207.260.

Stock, Hans G.: *See—*
Morgner, Friedrich W.; Hock, Franz; and Stock, Hans G., 4,224,720, Cl. 19-204.000.

Stokes, Richard A., to Burroughs Corporation. Operator independent template control architecture. 4,225,920, Cl. 364-200.000.

Stoller, Patricia S.; Hammonds, James C.; and Van Dyke, Ronald D., to ACF Industries, Inc. Fifth wheel for railway trailer hitch including a one-way gate. 4,225,276, Cl. 410-64.000.

Stone, Alan M., to Sphere Investments Limited. Fluid flow manifold. 4,225,089, Cl. 239-562.000.

Storandt, Ralf, to Vereinigte Baubeschlagfabriken Gretsch & Co. GmbH. Ski binding incorporating a ski brake. 4,225,150, Cl. 280-605.000.

Strahan, Graeme R.: *See—*
Cole, Martin T.; and Strahan, Graeme R., 4,225,858, Cl. 340-554.000.

Strand, Nils-Erik: *See—*
Edblom, Karl G.; Nordin, Kenneth I.; Staaf, Per O.; Stenberg, Erik G.; Strand, Nils-Erik; and Svensson, Bo L. H., 4,225,386, Cl. 162-343.000.

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Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., 4,225,626, Cl. 426-520.000.

Stratton, John R. Horizontal mining machine and method of slot mining. 4,225,186, Cl. 299-18.000.

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Uhl, Jurgen; Marx, Dieter; Hausberg, Hans-Heinrich; Strehlow, Wighard; Minck, Klaus-Otto; Muller-Calgan, Helmut; and Seyfried, Christoph, 4,225,608, Cl. 424-267.000.

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Jaroche, Ralph J., 4,225,108, Cl. 248-544.000.

Strowick, Willibald, to Keiper Automobiltechnik GmbH & Co. KG. Anchoring means for safety belts for motor vehicle seats. 4,225,184, Cl. 297-468.000.

Strozyk, Rudolf-Helmut: *See—*
Emmenthal, Klaus-Dieter; Schafer, Otto; and Strozyk, Rudolf-Helmut, 4,224,915, Cl. 123-533.000.

Strunc, Gerald R., to Pako Corporation. Multiple speed web drive system. 4,225,073, Cl. 226-49.000.

Strutton, Bernice M. Natural childbirth positioner. 4,225,127, Cl. 269-325.000.

Stucker, Peter: *See—*
Elhaus, Friedrich W.; and Stucker, Peter, 4,224,816, Cl. 72-9.000.

Studholme, Robert M.: *See—*
Anderson, Robert J.; and Studholme, Robert M., 4,225,235, Cl. 356-316.000.

Sturm, Gerhard, to EBM Elektrobau Mulfingen GmbH & Co. Axial-flow fan. 4,225,285, Cl. 415-207.000.

Stussi, William E. Preparation of fruit-on-the-top sundae-style yogurt. 4,225,623, Cl. 426-42.000.

Styles, Virgil L.: *See—*
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,225,710, Cl. 544-236.000.

Suchor, Ronald, to Omni Plastic Products, Inc. Interlocking strip. 4,224,965, Cl. 138-154.000.

Suckfull, Fritz: *See—*
Nickel, Horst; and Suckfull, Fritz, 4,225,493, Cl. 260-186.000.

Suelflow, Robert E.; and Drobny, Edward M., to Honeywell Information Systems Inc. Tri-state bussing system. 4,225,959, Cl. 371-38.000.

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Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.

Sugasawa, Fukashi; Iizuka, Haruhiko; Matsumoto, Junichiro; and Etoh, Yukihiro, to Nissan Motor Company, Limited. Split engine operation with means for discriminating false indication of engine load reduction. 4,224,920, Cl. 123-198.00F.

Sugawara, Kokichi, to Sony Corporation. Tape cassette. 4,225,100, Cl. 242-198.000.

Sugita, Yoshiji: *See—*
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,225,675, Cl. 435-215.000.

Sugiura, Mamoru; Ohno, Hiroyuki; Sasaki, Yutaro; and Hama, Kazuaki. Method of preparing glucan having antitumor activity. 4,225,673, Cl. 435-101.000.

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Mitsuda, Tadao; Iwata, Minoru; and Sugiura, Masatoshi, 4,224,911, Cl. 123-589.000.

Suld, George: *See—*
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,225,728, Cl. 560-261.000.

Sulzer Brothers Limited: *See—*
Weber, Bernhard G., 4,224,699, Cl. 3-1.913.

Sumitomo Durez Company, Ltd.: *See—*
Tomita, Shoji; and Tokunaga, Tetsuya, 4,225,297, Cl. 425-6.000.

Sumitomo Electric Industries, Ltd.: *See—*
Fujimori, Naoji; Miyake, Masaya; Yamamoto, Takaharu; and Hara, Akio, 4,225,344, Cl. 75-203.000.
Kakuzen, Hideo; Kurosaki, Shiro; and Usui, Yuichi, 4,225,330, Cl. 65-18.000.
Okita, Koichi, 4,225,547, Cl. 264-127.000.

Sumitomo Metal Industries Limited: *See*—
Marukawa, Katsukiyo; Okamoto, Setsuo; Yamada, Kazunari; and Iba, Masahisa, 4,225,565, Cl. 423-208.000.
Sumpter, Charles B., Jr.: *See*—
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,224,883, Cl. 112-10.000.
Sun Oil Company of Pennsylvania: *See*—
Myers, Harry K., Jr., 4,225,736, Cl. 585-360.000.
Sundberg Corporation: *See*—
Sundberg, Darrell W., 4,224,692, Cl. 2-161.00R.
Sundberg, Darrell W., to Sundberg Corporation. Freight handling glove. 4,224,692, Cl. 2-161.00R.
Sundpacma Aktiebolag: *See*—
Salenbo, Sten, 4,224,781, Cl. 53-473.000.
Suntech, Inc.: *See*—
Hall, Lewis W., Jr.; Tice, John D.; Myers, Harry K., Jr.; and Schneider, Abraham, 4,225,735, Cl. 585-360.000.
Lyons, James E.; Suld, George; and Shinn, Robert W., 4,225,728, Cl. 560-261.000.
Super Sack Manufacturing Corporation: *See*—
Williamson, Robert R.; and Derby, Norwin C., 4,224,970, Cl. 150-1.000.
Suter, Franz: *See*—
Masek, Jaroslav; and Suter, Franz, 4,225,284, Cl. 415-16.000.
Suzuki, Chuji: *See*—
Ise, Masahiro; Inazaki, Kenzo; Machino, Katsuyuki; and Suzuki, Chuji, 4,225,807, Cl. 315-169.300.
Suzuki, Hiroaki: *See*—
Masuda, Eiji; Tanaka, Teruaki; Yamaguchi, Tetsuo; and Suzuki, Hiroaki, 4,225,847, Cl. 340-802.000.
Suzuki, Ikuo, to Aloace Company Limited. Aloctin A. 4,225,486, Cl. 260-112.00R.
Suzuki, Kenji: *See*—
Kadota, Michio; Sato, Tomoharu; and Suzuki, Kenji, 4,224,725, Cl. 29-25.350.
Suzuki, Masatosi: *See*—
Tanaka, Kazuo; Takenaka, Osamu; and Suzuki, Masatosi, 4,225,634, Cl. 427-101.000.
Suzuki, Yasunori, to Yasui Sangyo Co. Ltd. Device for detecting cable breaks in a lift. 4,225,117, Cl. 254-89.00H.
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Piezoelectric knocking detector for internal combustion engine. 4,225,802, Cl. 310-321.000.
Svensson, Bo L. H.: *See*—
Edblom, Karl G.; Nordin, Kenneth I.; Staaf, Per O.; Stenberg, Erik G.; Strand, Nils-Erik; and Svensson, Bo L. H., 4,225,386, Cl. 162-343.000.
Sweat Buddy, Inc.: *See*—
Black, Henry C.; and Black, Ella J., 4,224,712, Cl. 15-209.00R.
Swenson, Emil S.: *See*—
Young, Gary A.; and Swenson, Emil S., 4,224,706, Cl. 5-449.000.
Swiatek, Henry J., to Carborundum Company, The. Heat set and destretched polyester backing material in coated abrasive manufacture. 4,225,321, Cl. 51-295.000.
Swiss Aluminium Ltd.: *See*—
Dantzig, Jonathan A.; Tyler, Derek E.; and Milici, Richard C., 4,225,544, Cl. 264-43.000.
Switzer, William P.; and Farrington, Daniel O., to Iowa State University Research Foundation, Inc. Intra-respiratory vaccine for prevention of *Bordetella bronchiseptica* infection and method of use. 4,225,583, Cl. 424-92.000.
Taberman, Gote. Method and installation for heating of seats, especially in outdoor arenas and the like. 4,225,774, Cl. 219-217.000.
Tagaeto, Takao: *See*—
Nakanishi, Takenori; Yoshikawa, Yuji; and Tagaeto, Takao, 4,225,560, Cl. 422-159.000.
Tagawa, Naoji, to Nissan Motor Company, Limited. Warp tension control mechanism for loom. 4,224,967, Cl. 139-108.000.
Taguchi, Moriyuki. Method and device for silencing the exhaust noise of internal combustion engines. 4,225,011, Cl. 181-269.000.
Tahbaz, Pirouz: *See*—
Steinman, Martin; and Tahbaz, Pirouz, 4,225,711, Cl. 544-238.000.
Taifu, Tatsuya: *See*—
Toyama, Noboru; and Taifu, Tatsuya, 4,224,909, Cl. 123-568.000.
Taito Corporation: *See*—
Ikeda, Yasuo, 4,225,929, Cl. 364-521.000.
Tajima, Hiroyuki; and Arai, Tetsuo, to Fuji Electric Co., Ltd. Fuel cell. 4,225,654, Cl. 429-34.000.
Takada, Juichiro, to Takata Koyjo Co., Ltd. Passive vehicle occupant restraint belt system. 4,225,154, Cl. 280-804.000.
Takada, Juichiro. Vehicle seat. 4,225,178, Cl. 297-216.000.
Takagi, Hiedo: *See*—
Nakamura, Hiroaki; Kumita, Izumi; Sugita, Yoshiji; and Takagi, Hiedo, 4,225,675, Cl. 435-215.000.
Takahara, Yoshiyuki: *See*—
Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, 4,225,585, Cl. 424-114.000.
Takahashi, Jiro: *See*—
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, 4,225,708, Cl. 544-159.000.
Takahashi, Masayuki: *See*—
Minagawa, Motonobu; Nakahara, Yutaka; and Takahashi, Masayuki, 4,225,474, Cl. 260-23.0XA.
Takahashi, Nobuo: *See*—
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, to Hokkai Can Co., Ltd. Method for forming cans. 4,224,888, Cl. 113-120.00F.
Takamaru, Takeshi; Kashiwaya, Mineo; Morita, Kiyomi; and Oobayashi, Seiji, to Hitachi, Ltd. Acceleration pump of carburetor. 4,225,535, Cl. 261-34.00B.
Takamatsu, Hideki: *See*—
Hoshiyama, Satoshi; Fukushima, Shuichi; Kobayashi, Hiroshi; and Takamatsu, Hideki, 4,225,743, Cl. 585-512.000.
Takata Koyjo Co., Ltd.: *See*—
Takada, Juichiro, 4,225,154, Cl. 280-804.000.
Takatori Machinery Works, Ltd.: *See*—
Takatori, Osho, 4,224,885, Cl. 112-121.150.
Takatori, Osho, to Takatori Machinery Works, Ltd. Seaming apparatus for gored panty-hose. 4,224,885, Cl. 112-121.150.
Takaya, Takao: *See*—
Kamiya, Takashi; and Takaya, Takao, 4,225,707, Cl. 544-16.000.
Takayama, Shoichiro; Nakagata, Norio; and Katsuno, Takeharu, to Oki Electric Industry Co., Ltd. High efficiency facsimile transmission system. 4,225,888, Cl. 358-288.000.
Takeda Chemical Industries, Ltd.: *See*—
Higashide, Eiji; Asai, Mitsuko; and Tanida, Seiichi, 4,225,494, Cl. 260-239.30P.
Imada, Akira; Kintaka, Kazuhiko; and Haibara, Konomi, 4,225,586, Cl. 424-117.000.
Marumoto, Ryuji; Tanabe, Masao; and Furukawa, Yoshiyasu, 4,225,591, Cl. 424-180.000.
Takeda, Yoshimitsu: *See*—
Shimizu, Kazuma; Kariyama, Shiso; Takeda, Yoshimitsu; and Yoshimura, Masato, 4,225,295, Cl. 418-142.000.
Takeda, Yuji: *See*—
Suzuki, Yutaka; Ito, Osamu; Hobo, Nobuhito; Goto, Kenji; Sawada, Daisaku; Shigematu, Takashi; and Takeda, Yuji, 4,225,802, Cl. 310-321.000.
Takefuta, Hideyasu; Iwata, Kohki; and Yamaguchi, Toshio, to Diesel Kiki Co., Ltd. Electromagnetic spring-wound clutch. 4,225,027, Cl. 192-84.00T.
Takenaka, Osamu: *See*—
Tanaka, Kazuo; Takenaka, Osamu; and Suzuki, Masatosi, 4,225,634, Cl. 427-101.000.
Takenaka, Takashi; Maegawa, Masaaki; and Nakanishi, Tosaku, to Sharp Kabushiki Kaisha. Magnetic tape recorder having a tape drive controller implemented with a digital processor chip. 4,225,890, Cl. 360-72.100.
Takeshita, Isamu: *See*—
Gunjima, Tomoki; and Takeshita, Isamu, 4,225,400, Cl. 204-98.000.
Takeuchi, Kazutsugu, to Takeuchi Press Limited Company. Device for exercising infant in walking. 4,225,146, Cl. 280-87.02W.
Takeuchi Press Limited Company: *See*—
Takeuchi, Kazutsugu, 4,225,146, Cl. 280-87.02W.
Tally Corporation: *See*—
Wagner, Richard E.; Chandrasekaran, Verivada; and Bringhurst, Edward D., 4,225,250, Cl. 400-124.000.
Tanabe, Masao: *See*—
Marumoto, Ryuji; Tanabe, Masao; and Furukawa, Yoshiyasu, 4,225,591, Cl. 424-180.000.
Tanaka, Jiro; and Tsuchiya, Yoshimasa, to Nissan Motor Company, Limited. Lock striker with retractable keeper bar. 4,225,166, Cl. 292-341.170.
Tanaka, Kanji: *See*—
Hatanaka, Takayoshi; Yakushiji, Tsuguharu; and Tanaka, Kanji, 4,225,767, Cl. 219-10.55F.
Tanaka, Kazuo; Takenaka, Osamu; and Suzuki, Masatosi, to Nippondenso Co., Ltd. Method for manufacturing gas composition detector. 4,225,634, Cl. 427-101.000.
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, to Toyo Kogyo Co., Ltd. Cylinder head construction. 4,224,918, Cl. 123-657.000.
Tanaka, Kozi: *See*—
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.
Tanaka, Masaaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system with an auxiliary valve. 4,224,912, Cl. 123-568.000.
Tanaka, Teruaki: *See*—
Masuda, Eiji; Tanaka, Teruaki; Yamaguchi, Tetsuo; and Suzuki, Hiroaki, 4,225,847, Cl. 340-802.000.
Tanaka, Toshimitsu: *See*—
Tanaka, Kazuyuki; Kobayashi, Kazuo; Okabe, Itsuro; and Tanaka, Toshimitsu, 4,224,918, Cl. 123-657.000.
Tanaka, Yasuyuki: *See*—
Takahashi, Yuzo; Tanaka, Yasuyuki; Nagai, Katsumi; Takahashi, Nobuo; Matsuda, Hiroshi; Ono, Koichi; Tanaka, Kozi; and Oyama, Shiro, 4,224,888, Cl. 113-120.00F.
Tanida, Seiichi: *See*—
Higashide, Eiji; Asai, Mitsuko; and Tanida, Seiichi, 4,225,494, Cl. 260-239.30P.

Tappe, Wilfried: *See*—
Hars, Christoph; Schirrich, Klaus; Steinmeier, Bodo; and Tappe, Wilfried, 4,224,871, Cl. 101-248.000.

Tarayre, Jean-Pierre; Cousse, Henri; Mouzin, Gilbert; Lauressergues, Henri; and Casadio, Silvano, to Pierre Fabre, S.A. Immunoactivators derived from amino thiazoles. 4,225,610, Cl. 424-270.000.

Tarzian, George M., to Chicago Automatic Machine, Inc. Continuous rotary and work process apparatus. 4,224,729, Cl. 29-240.000.

Tate & Lyle Limited: *See*—
Waites, Geoffrey M. H.; Ford, William C. L.; Khan, Riaz A.; and Jones, Haydn F., 4,225,590, Cl. 424-180.000.

Taulman Company, The: *See*—
Harris, Robert H.; and Lamica, John S., 4,225,443, Cl. 210-510.000.

Taute, Mark A.; Treichel, Richard; Marks, Jeffrey C.; and Mattson, Timothy J., to Deere & Company. Tractor with large caster angle to improve steering clearance. 4,225,151, Cl. 280-661.000.

Taylor, Gary N.: *See*—
Moran, Joseph M.; and Taylor, Gary N., 4,225,664, Cl. 430-306.000.

Taylor, Glenn N.; and Patel, Bhupendra C., to Kendall Company, The. Method of making a catheter. 4,225,371, Cl. 156-152.000.

Taylor, Lauren P.; and Petroski, Alex, to LRS Research Ltd. Apparatus and method for sensing the quality of dewatered sludge. 4,224,821, Cl. 73-32.00R.

Taylor, Leland T. Pyrolysis apparatus. 4,225,392, Cl. 202-93.000.

Teach, Ted L.: *See*—
Davidson, Richard W.; Rando, Joseph F.; and Teach, Ted L., 4,225,226, Cl. 356-1.000.

Technical Operations, Incorporated: *See*—
Parsons, George W., Jr.; and Drainoni, Riccardo A., 4,225,790, Cl. 250-497.000.

Technicon Instruments Corporation: *See*—
Pace, Salvatore J., 4,225,410, Cl. 204-195.00R.

Tector, Nancie; and Curley, John V. Insulated food container. 4,225,052, Cl. 220-22.000.

Tecumseh Products Company: *See*—
von Kaler, Roland L., 4,224,839, Cl. 74-701.000.

Teichmann, Paul; Beneke, Wolfgang; Cremer, Heinrich; and Ludwig, Guy, to Trutzschler GmbH & Co. KG. Cylinder screen for a card. 4,224,717, Cl. 19-98.000.

Teijin Limited: *See*—
Hirakawa, Tadashi, 4,225,642, Cl. 428-91.000.

Teitzman, Melvin: *See*—
Jaramillo, Giovanni; Teitzman, Melvin; and Lipinski, Richard D., 4,225,970, Cl. 455-89.000.

Tektronix, Inc.: *See*—
Moriyasu, Hiro; Gilmore, Jack A.; Velsink, Willem B.; and Havarro, Luis J., 4,225,940, Cl. 364-900.000.

Telease, Inc.: *See*—
Block, Robert S.; and Martin, John R., 4,225,884, Cl. 358-122.000.

Telecommunications Radioelectriques et Telephoniques T.R.T.: *See*—
Ferrieu, Gilbert M. M., 4,225,963, Cl. 375-28.000.

Telefonaktiebolaget L M Ericsson: *See*—
Lind, Hans S. H.; and Orevik, Sune A. W., 4,225,815, Cl. 320-39.000.

Temafa Textilmaschinenfabrik Meissner, Morgner & Co. GmbH: *See*—
Morgner, Friedrich W.; Hock, Franz; and Stock, Hans G., 4,224,720, Cl. 19-204.000.

Terahara, Zuisho: *See*—
Kida, Takao; Terahara, Zuisho; Shida, Toshiro; Mizuno, Hiroshi; Takahara, Yoshiyuki; and Hirose, Yoshiteru, 4,225,585, Cl. 424-114.000.

Terakawa, Kiyoshi H.: *See*—
Hartley, Henry F.; Lemay, Richard A.; Terakawa, Kiyoshi H.; and Woods, William E., 4,225,921, Cl. 364-200.000.

Tetra Pak International AB: *See*—
Lothman, Stig A.; and Fuchs, Alfred, 4,225,556, Cl. 422-28.000.

Texacone Company, The: *See*—
Wheeler, John H., 4,225,014, Cl. 187-1.00R.

Texas Instruments Incorporated: *See*—
Bray, William E., 4,225,913, Cl. 363-97.000.
Harrison, Earnest R.; and Johnston, Roy C., 4,225,009, Cl. 181-120.000.
Kuo, Chang-Kiang, 4,225,945, Cl. 365-149.000.
McBride, Lyle E., Jr.; and Delagi, Richard G., 4,225,213, Cl. 350-96.200.
Vandierendonck, Jerry L., 4,225,934, Cl. 364-716.000.

Texasgulf Inc.: *See*—
Freeman, George M.; and Nightingale, David E., 4,225,342, Cl. 75-109.000.

Textron, Inc.: *See*—
Presswood, Eiland K., 4,225,198, Cl. 308-37.000.

Thagard, George F., Jr.: *See*—
Roy, Santanu, 4,225,678, Cl. 521-101.000.

Thermal Dynamics Corporation: *See*—
Wilkins, Raymond G., 4,225,769, Cl. 219-130.400.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Alert system in a mobile track surfacing machine. 4,224,874, Cl. 104-12.000.

Theurer, Karl-Heinz: *See*—
Prohaska, Hans; and Theurer, Karl-Heinz, 4,224,832, Cl. 74-388.00R.

Thomas, Stephen P., to Phillips Petroleum Company. Adsorbent-treated cat cracked gasoline in motor fuels. 4,225,319, Cl. 44-72.000.

Thompson, William E. Pivot mechanism and method of manufacturing same. 4,225,258, Cl. 403-56.000.

Thomson-CSF: *See*—
Cojan, Yves, 4,225,215, Cl. 350-174.000.
Gautier, Herve, 4,225,887, Cl. 358-213.000.
Moiroud, Guy; and Veron, Serge, 4,225,882, Cl. 358-113.000.

Thun, Rudolf E.: *See*—
Ciccio, Joseph A.; Thun, Rudolf E.; and Fardy, Harry J., 4,225,900, Cl. 361-395.000.

Thune-Eureka A/S: *See*—
Moflag, Per, 4,224,782, Cl. 53-587.000.

Thurston, Glenn C.; McDaniels, John D., Jr.; and Gertsch, Paul R., to General Atomic Company. Heat exchange apparatus for a reactor. 4,224,983, Cl. 165-158.000.

Tice, John D.: *See*—
Hall, Lewis W., Jr.; Tice, John D.; Myers, Harry K., Jr.; and Schneider, Abraham, 4,225,735, Cl. 585-360.000.

Tideland Signal Corporation: *See*—
Luce, Dan G., 4,225,901, Cl. 362-20.000.

Tiefert, Karl H.; and Curby, Rockford C., to Hewlett-Packard Company. Low electrical and thermal impedance semiconductor component and method of manufacture. 4,224,734, Cl. 29-583.000.

Tieman, Charles H., to Shell Oil Company. 2,2'-(Sulfinylbis(nitromethylidyne))bis(tetrahydro-2H-1,3-thiazine). 4,225,603, Cl. 424-246.000.

Tilly, Guy; Hardouin, M. Jean-Charles; and Lautrou, Jean, to Guerbet S.A. Ionic polyiodo benzene derivatives useful as X-ray contrast media. 4,225,577, Cl. 424-5.000.

Timm, Thies; and Hartwig, Claus, to Phoenix Aktiengesellschaft. Process for producing elastomers from hetero-disperse systems by casting from liquid mass. 4,225,683, Cl. 525-126.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Kamiyama, Setsuo; Shiozawa, Kouji; Okumura, Yoshiharu; and Kaneko, Katsumi, 4,225,727, Cl. 560-244.000.

Tobler S.A.: *See*—
Pollak, Mirko, 4,225,124, Cl. 269-234.000.

Toda Kogyo Corp.: *See*—
Makino, Hajime; Shinoda, Wataru; and Yamamura, Kazuhiro, 4,225,352, Cl. 106-14.210.

Todo, Matsuzo: *See*—
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; and Fujiwara, Kiyoshi, 4,225,079, Cl. 233-15.000.

Togel, Kurt: *See*—
Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, 4,224,843, Cl. 81-57.380.

Tokunaga, Tetsuya: *See*—
Tomita, Shoji; and Tokunaga, Tetsuya, 4,225,297, Cl. 425-6.000.

Tokuno, Masateru, to Rengo Co., Ltd. Tool positioning apparatus. 4,224,847, Cl. 83-71.000.

Tokuyama Soda Company Limited: *See*—
Marukawa, Katsukiyo; Okamoto, Setsuo; Yamada, Kazunari; and Iba, Masahisa, 4,225,565, Cl. 423-208.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hirata, Akio; and Saito, Suzuo, 4,225,914, Cl. 363-160.000.
Inomata, Koichiro; Shimanuki, Senji; and Hasegawa, Michio, 4,225,339, Cl. 75-122.000.
Masuda, Eiji; Tanaka, Teruaki; Yamaguchi, Tetsuo; and Suzuki, Hiroaki, 4,225,847, Cl. 340-802.000.
Yamashita, Kiyoshi, 4,224,811, Cl. 68-12.00R.

Tokyo Shibaura Electric Co., Ltd.: *See*—
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von Seggern, Ernest A.; von Seggern, Henry E., deceased; and von Seggern, Blanche, executrix, 4,224,905, Cl. 123-65.0WA.

Von Strandtmann, Maximilian: *See*—
Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, 4,225,722, Cl. 548-253.000.

Voronevsky, Svirid I.: *See*—
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., 4,225,676, Cl. 435-255.000.

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Vyzkumny ustav veterinarniho lekarstvi: *See*—
Rysanek, Duson; Kotrc, Bohumir; Hamalcik, Jaroslav; and Olejnik, Peter, 4,225,820, Cl. 1324-450.000.

W. Braun Co.: *See*—
Braun, Morris; and Spransy, George B., 4,225,255, Cl. 401-137.000.

W-K-M Wellhead Systems, Inc.: *See*—
Diehl, Robert J.; and Godare, William L., 4,225,325, Cl. 55-191.000.

W. R. Grace & Co.: *See*—
Bieler, Anne C.; and Howe, Milton A., Jr., 4,225,373, Cl. 156-198.000.
Gaudette, Roger R.; Ohlson, John L.; and Scanlon, Patricia M., 4,225,502, Cl. 260-465.00E.
Young, E. Richard, 4,225,504, Cl. 260-465.50A.

Wabco Westinghouse GmbH: *See*—
Weise, Lutz; and Liermann, Peter, 4,225,195, Cl. 303-106.000.

Wada, Masahiro; Ueshima, Michio; Yanagisawa, Isao; and Ninomiya, Michikazu, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Catalytic oxide composition for preparing methacrylic acid. 4,225,466, Cl. 252-435.000.

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Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,225,889, Cl. 360-14.000.

Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., to Dow Chemical Company, The. Cationic deposition of polymers onto a conductive surface. 4,225,406, Cl. 204-181.00C.

Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., to Dow Chemical Company, The. Cathodic electrodeposition of polymers onto a conductive surface. 4,225,407, Cl. 204-181.00C.

Wagner, Kuno, to Bayer Aktiengesellschaft. Aminoplast dispersions and polyurethanes prepared therefrom. 4,225,481, Cl. 260-33.20R.

Wagner, Paul E.: *See*—
Hennessy, Michael P.; Prueher, Andrew B.; and Wagner, Paul E., 4,225,174, Cl. 294-113.000.

Wagner, Richard C., to Hollymatic Corporation. Molding device. 4,224,716, Cl. 17-32.000.

Wagner, Richard E.; Chandrasekaran, Verivada; and Bringhurst, Edward D., to Tally Corporation. Segmented-ring magnet print head. 4,225,250, Cl. 400-124.000.

Waites, Geoffrey M. H.; Ford, William C. L.; Khan, Riaz A.; and Jones, Haydn F., to Tate & Lyle Limited. Male fertility-inhibiting compositions of 6-chlorodeoxy-saccharides. 4,225,590, Cl. 424-180.000.

Wakeman, Russell J.: *See*—
Dougherty, Michael; and Wakeman, Russell J., 4,225,536, Cl. 261-69.00R.

Wakimura, Kazuo. Toy fishing play unit. 4,224,761, Cl. 46-123.000.

Walker, Marshall: *See*—
Ball, Douglas C.; and Walker, Marshall, 4,224,769, Cl. 52-36.000.

Walker, William. Hot melt carpet seam roller. 4,224,726, Cl. 29-121.100.

Wall, Thomas H.; and Johnson, Kevin T., to Minnesota Mining and Manufacturing Company. Evaporative humidifier. 4,225,542, Cl. 261-142.000.

Wallace Murray Corporation: *See*—
Crooks, James W., 4,224,841, Cl. 74-801.000.

Wallis, Craig: *See*—
Melnick, Joseph L.; and Wallis, Craig, 4,225,669, Cl. 435-29.000.

Wang, Robert S.: *See*—
Vasishth, Ramesh C.; and Wang, Robert S., 4,225,477, Cl. 260-29.2TN.

Ward, Arthur G. T., to BPB Industries Limited. Treatment of gypsum plaster. 4,225,360, Cl. 106-109.000.

Ward, Terence J., to John Wyeth & Brother Limited. 1H-Pyrrole-1-acetamide compounds and their pharmaceutical compositions. 4,225,613, Cl. 424-274.000.

Warner-Lambert Company: *See*—
Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, 4,225,722, Cl. 548-253.000.

Warner, Paul L., Jr.; and Luber, Edward J., Jr., to Westwood Pharmaceuticals, Inc. 1-(2-Phenylureylene)imidazoles. 4,225,724, Cl. 548-346.000.

Warnke, Hans: *See*—
Heiermann, Siegfried; Lachner, Hans; Richter, Jorg; Schungel, Peter; Togel, Kurt; and Warnke, Hans, 4,224,843, Cl. 81-57.380.

Wassmann, Edgar, to Mesne Koh-I-Noor Rapidograph, Inc. Method for producing drawing stencils. 4,225,548, Cl. 264-130.000.

Watanabe, Kazumasa: *See*—
Kanbe, Masaru; Watanabe, Kazumasa; Uemura, Morito; Takahashi, Jiro; Kobayashi, Ryuichiro; and Kobayashi, Tatsuhiko, 4,225,708, Cl. 544-159.000.

Watanabe, Masahiro; and Haruki, Hiroshi, to Matsushita Electric Industrial Co., Ltd. PLL Synthesizer. 4,225,828, Cl. 331-1.00A.

Watanabe, Toshiro: *See*—
Kubo, Sueki; Watanabe, Toshiro; Fujita, Masayuki; Matsuno, Tadahiko; and Morita, Akira, 4,225,083, Cl. 239-132.300.

Watanabe, Yoshinori: *See*—
Kondo, Shiro; and Watanabe, Yoshinori, 4,225,758, Cl. 200-4.000.

Waters, Ronald L.; Grady, Thomas J.; Brown, Thomas F.; and Long, E. Shirley. Patient care timer. 4,225,852, Cl. 340-286.00R.

Watts, Geoffrey P., to Beckman Instruments, Inc. Precision self-adjusting slope circuit. 4,225,825, Cl. 328-185.000.

Waugh, Robert E., to D. L. Auld Company, The. Method and apparatus for flow coating with suck-back control. 4,225,638, Cl. 427-331.000.

Wavin B.V.: *See*—
Ettema, Ernst, 4,225,046, Cl. 206-511.000.

Wayside Manufacturing Co., Inc.: *See*—
Petty, James A., 4,224,770, Cl. 52-82.000.

Weber, Bernhard G., to Sulzer Brothers Limited. Cap-shaped endoprosthesis for a femoral head. 4,224,699, Cl. 3-1.913.

Weber, David C.: *See*—
Schlesselman, Harold D.; and Weber, David C., 4,225,842, Cl. 338-34.000.

Weber, Jurgen; and Grau, Heinz, to Ruhrchemie Aktiengesellschaft. Isomeric hydroxymethyl-formyl-tricyclo[5,2,1,$0^{2,6}$]decane mixture and process for manufacture thereof. 4,225,515, Cl. 568-444.000.

Weber, Robert E.; and Harper, Patrick D., to Bendix Corporation, The. Inductive driver circuit effecting slow and fast current decay. 4,225,898, Cl. 361-154.000.

Wee Donuts, Inc.: *See*—
Barber, Eugene F.; and Barber, Steven C., 4,224,863, Cl. 99-331.000.

Weeren, Eric K.: *See*—
Cagle, George C.; and Weeren, Eric K., 4,225,964, Cl. 375-86.000.

Wehrli, Rudolf: *See*—
Ackermann, Peter; Drabek, Jozef; Farooq, Saleem; Gsell, Laurenz; Kristiansen, Odd; and Wehrli, Rudolf, 4,225,616, Cl. 424-305.000.

Wehrmann, Nicholas; and Williams, Charlie L., to Ithaca Textiles, Inc. Hosiery product. 4,224,693, Cl. 2-241.000.

Weigand, Rex O.: *See*—
Gaeddert, Melvin V.; and Weigand, Rex O., 4,224,867, Cl. 100-88.000.

Weil, Edward D., to Stauffer Chemical Company. Copolycondensation products of β-haloalkyl phosphates and dialkyl phosphonates. 4,225,522, Cl. 260-978.000.

Weiner, George C. Coin and key operated storage system. 4,225,278, Cl. 414-273.000.

Weise, Lutz; and Liermann, Peter, to Wabco Westinghouse GmbH. Process and device for the regulation of braking pressure in lock-up protection systems. 4,225,195, Cl. 303-106.000.

Weisert, Loser & Sohn GmbH & Co.: *See*—
Loser, Karlheinz, 4,224,849, Cl. 83-80.000.

Welko Industriale S.p.A.: *See*—
Mantegani, Enzo, 4,225,197, Cl. 308-37.000.

Wells, Carl E. Solar roof drain. 4,224,923, Cl. 126-417.000.

Wells, Edward R.: *See*—
Kearney, Donald R.; Trokhan, Paul D.; and Wells, Edward R., 4,225,382, Cl. 162-111.000.

Wendell, Russell C. Apparatus for cooking meat patties and the like. 4,224,864, Cl. 99-349.000.

Wendt, Hans J., to Messerschmitt-Bolkow-Blohm GmbH. Apparatus for loading and unloading an aircraft and ascertaining the weight of the load. 4,225,926, Cl. 364-463.000.

Wendt, Jens H.: *See*—
Colpitts, Ralph W.; and Wendt, Jens H., 4,225,696, Cl. 528-76.000.

Wensley, Brian J. K.; and Wensley, Gillian E. Automatic door and window locking system. 4,225,164, Cl. 292-33.000.

Wensley, Gillian E.: *See*—
Wensley, Brian J. K.; and Wensley, Gillian E., 4,225,164, Cl. 292-33.000.

Werner, Frank D.; Kleven, Lowell A.; Case, James T.; and Bloomfield, Roger D., to Park Energy Company. Cover for solar heat collector. 4,224,928, Cl. 126-450.000.

Werner, Paul, to Keiper Automobiltechnik GmbH & Co. KG. Power driven adjuster for a backrest of a vehicle seat. 4,225,182, Cl. 297-362.000.

Werzalit J F Werz Jr Kg Pressholzwerk: *See*—
Munk, Edmund; and Henke, Hermann, 4,225,545, Cl. 264-72.000.
Wesner, Walter H.: *See*—
Blake, William S.; and Wesner, Walter H., 4,225,061, Cl. 222-207.000.
Wessling, Ritchie A.: *See*—
Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,225,406, Cl. 204-181.00C.
Wagener, Earl H.; Wessling, Ritchie A.; and Gibbs, Dale S., 4,225,407, Cl. 204-181.00C.
Westcott, Richard. Painter's accessory. 4,225,064, Cl. 222-569.000.
Westinghouse Electric Corp.: *See*—
Brown, William W.; and Van der Schoot, Martinus R., 4,225,390, Cl. 176-86.00L.
Johnston, Robert J.; Layciak, Stephen G.; and Dobrosielski, Stephen S., 4,225,765, Cl. 200-307.000.
Justice, James W. H.; Kennedy, Paul G.; and Miller, Robert C., 4,225,771, Cl. 219-137.00R.
Martincic, Paul W., 4,225,839, Cl. 336-96.000.
Masters, Harvey M., 4,225,960, Cl. 371-47.000.
Sahasrabudhe, Arun P., 4,225,813, Cl. 318-371.000.
Yoldas, Bulent E., 4,225,635, Cl. 427-106.000.
Westland Aircraft Limited: *See*—
Vincent, Alan H.; and King, Stephen P., 4,225,287, Cl. 416-145.000.
Westvaco Corporation: *See*—
Hughes, Horatio, Jr.; and Schilling, Robert A., 4,225,385, Cl. 162-263.000.
Westwood Pharmaceuticals, Inc.: *See*—
Warner, Paul L., Jr.; and Luber, Edward J., Jr., 4,225,724, Cl. 548-346.000.
Wheeler, John H., to Texacone Company, The. Self-aligning elevator connection. 4,225,014, Cl. 187-1.00R.
Whipple, Walter, III: *See*—
Reschovsky, John M.; and Whipple, Walter, III, 4,225,851, Cl. 340-177.0CA.
Whitchurch, Raymond, to Meramec Industries, Inc. Shoe sole. 4,224,748, Cl. 36-24.500.
White, Ben E.: *See*—
Geyer, Charles J., Jr.; and White, Ben E., 4,224,866, Cl. 100-40.000.
White, Stanley A.: *See*—
Chang, Tien-Lin; Kabaian, Jimmy H.; Riganati, John P.; and White, Stanley A., 4,225,850, Cl. 340-146.30E.
Whiteway Manufacturing Co.: *See*—
Scholz, Charles F.; and Reibling, Robert, 4,225,909, Cl. 362-367.000.
Whitman Medical Corporation: *See*—
Gordon, Marvin, 4,224,937, Cl. 128-133.000.
Wick, Hans-Joachim, to Hoesch Werke Aktiengesellschaft. Method of controlling a heating furnace for steel ingots. 4,225,306, Cl. 432-24.000.
Wickens, Justin H. Method of producing light emitting semiconductor display. 4,225,380, Cl. 156-657.000.
Wiechman, Donald G.: *See*—
Moore, Edwin C.; Rogers, Robert J.; and Wiechman, Donald G., 4,225,770, Cl. 219-137.00R.
Wiegand Karlsruhe GmbH: *See*—
Hummel, Walter; Klinke, Gregor; and Prosperi, Alberto, 4,225,326, Cl. 55-257.00R.
Wieland, Erich G., to Koenig & Bauer Aktiengesellschaft. Clamping gripper. 4,224,873, Cl. 101-409.000.
Wilgood Corporation: *See*—
Feller, Murray F., 4,224,825, Cl. 73-193.00R.
Wilkens, Christian, to Karl Mayer Textilmaschinenfabrik GmbH. Warp knitting machines with slider needles and a fall plate. 4,224,809, Cl. 66-207.000.
Wilkes, Mulkey C.: *See*—
Cox, Jerry W.; and Wilkes, Mulkey C., 4,225,394, Cl. 203-37.000.
Wilkins, Raymond G., to Thermal Dynamics Corporation. Plasma torch starting circuit. 4,225,769, Cl. 219-130.400.
Willamette Industries, Inc.: *See*—
Croley, Thomas E., 4,225,078, Cl. 229-41.00C.
William H. Rorer, Inc.: *See*—
Won, Chong M.; Zalipsky, Jerome J.; and Patel, Dahyabhai M., 4,225,315, Cl. 23-230.0PC.
Williams, Charlie L.: *See*—
Wehrmann, Nicholas; and Williams, Charlie L., 4,224,693, Cl. 2-241.000.
Williams, Danny L.: *See*—
Lanter, Kent J.; Betz, Norman L.; and Williams, Danny L., 4,225,621, Cl. 426-2.000.
Williams, Edward W.: *See*—
Barlow, William A.; Rhodes, Maurice; Sherliker, Francis R.; and Williams, Edward W., 4,225,408, Cl. 204-181.00N.
Williams, James H., to Borden, Inc. Urea formaldehyde foam with low shrinkage. 4,225,680, Cl. 521-109.000.
Williamson, Robert R.; and Derby, Norwin C., to Super Sack Manufacturing Corporation. Collapsible receptacle for flowable materials. 4,224,970, Cl. 150-1.000.
Wilms, Karl-Heinz, to Optische Werke G. Rodenstock. Apparatus for measuring the radii of contact lenses. 4,225,231, Cl. 356-127.000.
Wilson, David C. Solar collector for fluid heating system. 4,224,924, Cl. 126-419.000.
Wilson, John C., to Eastman Kodak Company. Aldehyde-containing vinylaryl ethers. 4,225,689, Cl. 526-75.000.
Wimmer, Jorn: *See*—
Pfeifer, Rolf; and Wimmer, Jorn, 4,225,766, Cl. 200-314.000.
Winans, Stephen C.: *See*—
Beisner, Robert W.; and Winans, Stephen C., 4,225,530, Cl. 260-449.00L.
Winfield, Sidney. Moccasin cushioned sole. 4,224,747, Cl. 36-11.000.
Winfrey, Gerald N.: *See*—
Kobs, Frederick E.; Ryan, Joseph L.; Inoshita, Minoru; and Winfrey, Gerald N., 4,225,942, Cl. 364-900.000.
Winslow, John S., to MCA Disco-Vision, Inc. Recording and playback system. 4,225,873, Cl. 346-76.00L.
Winter, Bruce L.: *See*—
Mirza, Zia I.; Knell, Everett W.; and Winter, Bruce L., 4,225,415, Cl. 208-8.00R.
Wisconsin Alumni Research Foundation: *See*—
DeLuca, Hector F., 4,225,596, Cl. 424-236.000.
Wishart, George L., to Lipe-Rollway Corporation. Self-adjusting release mechanism with adjustment limiting means. 4,225,028, Cl. 192-111.00A.
Wolf, Tobin. Tortoise and hare game. 4,225,138, Cl. 273-243.000.
Wolfe, James F.; and Loo, Bock H., to SRI International. Thermally stable rod-like polybenzobisthiazole polymers. 4,225,700, Cl. 528-337.000.
Womack, Robert C., to AAA Products International Inc. Apparatus for threading rods. 4,225,273, Cl. 408-12.000.
Won, Chong M.; Zalipsky, Jerome J.; and Patel, Dahyabhai M., to William H. Rorer, Inc. Triazinones from amidinoureas. 4,225,315, Cl. 23-230.0PC.
Wood, Grady M.: *See*—
Neale, Ronald G.; and Wood, Grady M., 4,225,946, Cl. 365-163.000.
Woodard, Randle C. Pool skim net with rock scoop. 4,225,437, Cl. 210-223.000.
Woods, Lee O.: *See*—
Haag, Donald L.; and Woods, Lee O., 4,225,210, Cl. 339-258.00R.
Woods, William E.: *See*—
Hartley, Henry F.; Lemay, Richard A.; Terakawa, Kiyoshi H.; and Woods, William E., 4,225,921, Cl. 364-200.000.
Woodstream Corporation: *See*—
Loeffler, Herbert H., 4,224,756, Cl. 43-90.000.
Woollenweber, William E., to Cummins Engine Company, Inc. Turbine assembly. 4,224,794, Cl. 60-602.000.
Wortham, Carl A.: *See*—
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., 4,224,883, Cl. 112-10.000.
Wright, Bruce M.: *See*—
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Wright, George C., to Morton-Norwich Products, Inc. 2-Hydrazino-3-pyridinol-1-oxide hydrobromide. 4,225,717, Cl. 546-306.000.
Wrigley, Hank J., Jr. Method of making hydrocarbon composition. 4,225,318, Cl. 44-40.000.
Wu, Anna F.; and Wu, Tai T., to Northwestern University. Cell fractionating method. 4,224,942, Cl. 128-214.00R.
Wu, Tai T.: *See*—
Wu, Anna F.; and Wu, Tai T., 4,224,942, Cl. 128-214.00R.
Wulfing, Johann A.: *See*—
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Xerox Corporation: *See*—
Perreault, Donald A.; and Rich, Thomas C., 4,225,937, Cl. 364-726.000.
Turner, Sam R., 4,225,692, Cl. 526-244.000.
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus having means for recording a cue-signal. 4,225,889, Cl. 360-14.000.
Yakushiji, Tsuguharu: *See*—
Hatanaka, Takayoshi; Yakushiji, Tsuguharu; and Tanaka, Kanji, 4,225,767, Cl. 219-10.55F.
Yamada, Kazunari: *See*—
Marukawa, Katsukiyo; Okamoto, Setsuo; Yamada, Kazunari; and Iba, Masahisa, 4,225,565, Cl. 423-208.000.
Yamada, Kouichi: *See*—
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,225,889, Cl. 360-14.000.
Yamada, Kunio, to Mitsubishi Denki Kabushiki Kaisha. Terminal slowdown apparatus for elevator. 4,225,015, Cl. 187-29.00R.
Yamada, Toshio: *See*—
Kakuwa, Seiichi; Hattori, Toshihiko; Yamagata, Ichiro; and Yamada, Toshio, 4,225,294, Cl. 418-142.000.
Yamagata, Hiroshi: *See*—
Hasegawa, Mutsuo; Hirono, Hatsuo; Nagata, Katsuyuki; Hayashi, Shinji; and Yamagata, Hiroshi, 4,225,398, Cl. 204-33.000.
Yamagata, Ichiro: *See*—
Kakuwa, Seiichi; Hattori, Toshihiko; Yamagata, Ichiro; and Yamada, Toshio, 4,225,294, Cl. 418-142.000.
Yamagishi, Frederick G.; Miller, Leroy J.; Jensen, John E.; and Margerum, J. David, to Hughes Aircraft Company. Ortho-cyanophenyl biphenylcarboxylate liquid crystal esters and mixtures thereof. 4,225,454, Cl. 252-299.000.
Yamaguchi, Sizuo: *See*—
Sekine, Mitsuo; and Yamaguchi, Sizuo, 4,225,824, Cl. 328-63.000.

Yamaguchi, Tetsuo: *See*—
Masuda, Eiji; Tanaka, Teruaki; Yamaguchi, Tetsuo; and Suzuki, Hiroaki, 4,225,847, Cl. 340-802.000.
Yamaguchi, Toshio: *See*—
Takefuta, Hideyasu; Iwata, Kohki; and Yamaguchi, Toshio, 4,225,027, Cl. 192-84.00T.
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Clutch mechanism for automatic power transmission. 4,225,026, Cl. 192-70.200.
Yamamoto, Takaharu: *See*—
Fujimori, Naoji; Miyake, Masaya; Yamamoto, Takaharu; and Hara, Akio, 4,225,344, Cl. 75-203.000.
Yamamura, Kazuhiro: *See*—
Makino, Hajime; Shinoda, Wataru; and Yamamura, Kazuhiro, 4,225,352, Cl. 106-14.210.
Yamane, Shiro: *See*—
Hasegawa, Haruo; Seki, Kenji; Ema, Hideaki; Harada, Masahide; and Yamane, Shiro, 4,225,648, Cl. 428-336.000.
Yamashita, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic washer. 4,224,811, Cl. 68-12.00R.
Yamashita, Thoru: *See*—
Hasegawa, Shoichi; Yamashita, Thoru; and Kameda, Mitsuo, 4,225,563, Cl. 423-20.000.
Yanagisawa, Isao: *See*—
Wada, Masahiro; Ueshima, Michio; Yanagisawa, Isao; and Ninomiya, Michikazu, 4,225,466, Cl. 252-435.000.
Yang, Ralph T.: *See*—
Shen, Ming-Shing; and Yang, Ralph T., 4,225,572, Cl. 423-638.000.
Yashiro, Kenji, to Pioneer Electronic Corporation. Bidirectional data communication system. 4,225,939, Cl. 364-900.000.
Yasui Sangyo Co. Ltd.: *See*—
Suzuki, Yasunori, 4,225,117, Cl. 254-89.00H.
Yasui, Tokio: *See*—
Hirano, Reiji; Mochizuki, Koichi; Yasui, Tokio; and Shimazu, Jyoji, 4,225,932, Cl. 364-710.000.
Yokogawa, Tomohisa: *See*—
Okatani, Masanao; Onishi, Hiroshi; Ishibashi, Yoshiaki; Sato, Reisuke; Suganuma, Hisashi; Yokogawa, Tomohisa; Ueki, Yoshiharu; Kama, Haruo; Kosuga, Tadashi; and Ogawa, Tadashi, 4,225,968, Cl. 455-154.000.
Yokomizo, Motohiro. Picture-making device. 4,225,641, Cl. 428-41.000.
Yoldas, Bulent E., to Westinghouse Electric Corp. Method for applying reacted boron oxide layer to vitreous silica substrate. 4,225,635, Cl. 427-106.000.
Yoshida Kogyo K.K.: *See*—
Hasegawa, Mutsuo; Hirono, Hatsuo; Nagata, Katsuyuki; Hayashi, Shinji; and Yamagata, Hiroshi, 4,225,398, Cl. 204-33.000.
Kanzaka, Yoshihiro, 4,224,730, Cl. 29-408.000.
Uehara, Takeo, 4,224,975, Cl. 160-206.000.
Yoshikawa, Hiroshi, to Nippon Kayaku Kabushiki Kaisha. Process for the production of 2-chlorobenzonitrile derivatives. 4,225,534, Cl. 260-465.00G.
Yoshikawa, Yuji: *See*—
Nakanishi, Takenori; Yoshikawa, Yuji; and Tagaeto, Takao, 4,225,560, Cl. 422-159.000.
Yoshimura, Masato: *See*—
Shimizu, Kazuma; Kariyama, Shiso; Takeda, Yoshimitsu; and Yoshimura, Masato, 4,225,295, Cl. 418-142.000.
Yoshimura, Ryoichi; Honda, Munetaka; and Hirokawa, Norio, to Showa Denko Kabushiki Kaisha. Lime bearing agent for use in refining of ferrous melt. 4,225,348, Cl. 75-257.000.
Yoshimura, Takayuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Idle-up system during a power steering operation of a vehicle. 4,225,003, Cl. 180-54.00G.
Yoshinaga, Shoji; Kawano, Hirosige; Todo, Matsuzo; and Fujiwara, Kiyoshi, to Hitachi, Ltd. Liquid-liquid centrifugal extractor. 4,225,079, Cl. 233-15.000.
Yoshino, Tadashi: *See*—
Yabu, Toshiomi; Wada, Tatsuo; Yamada, Kouichi; and Yoshino, Tadashi, 4,225,889, Cl. 360-14.000.
Yotsutsuji, Akira; Ueda, Seiichi; and Iwami, Hiroyuki, to Osaka City & Taiyo Manufacturing Works Co., Ltd. Insulated metal mold. 4,225,109, Cl. 249-111.000.
Young, E. Richard, to W. R. Grace & Co. Monomeric N-methyleneaminoacetonitrile. 4,225,504, Cl. 260-465.50A.
Young, Gary A.; and Swenson, Emil S., to Dial-A-Firm, Inc. Pneumatic bed. 4,224,706, Cl. 5-449.000.
Young, Morris S.; and Marancik, William G., to Airco, Inc. Method of production multifilamentary intermetallic superconductors. 4,224,735, Cl. 29-599,000.
Young, Patricia A.: *See*—
Connor, David T.; Young, Patricia A.; and Von Strandtmann, Maximilian, 4,225,722, Cl. 548-253.000.
Zadravec, Jurica: *See*—
Vrsnak, Franc; Zadravec, Jurica; and Pecenko, Igor, 4,225,835, Cl. 335-78.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Jablonsky, Erich, 4,224,833, Cl. 74-422.000.
Zaitsev, Konstantin P.; Shleizer, Mikhail S.; Voronevsky, Svirid I.; Reshetnik, Vasily D.; Vain, Lazar I.; Movchan, Vladimir V.; Kishlar, Alexandr S.; Kireev, Fagim K.; Somov, Vsevolod S.; and Alferova, Larisa K., to Moskovsky Tekhnologichesky Institut Myasoni I Molochnoi Promysh Lennosti. Method of preparing nutrient medium from litter-free liquid manure for cultivating microorganisms and a plant for realizing same. 4,225,676, Cl. 435-255.000.
Zalipsky, Jerome J.: *See*—
Won, Chong M.; Zalipsky, Jerome J.; and Patel, Dahyabhai M., 4,225,315, Cl. 23-230.0PC.
Zanolli, Alexander B.: *See*—
Bloemendaal, John F.; Boone, Arthur M.; and Zanolli, Alexander B., 4,225,923, Cl. 362-301.000.
Zarchy, Andrew S.; and Kimura, Shiro G., to General Electric Company. Ionization effected removal of alkali composition from a hot gas. 4,225,323, Cl. 55-11.000.
Zats, Boris S.: *See*—
Vaschuk, Valery I.; Starikov, Gennady V.; Solomakha, Gennady P.; Chekhov, Oleg S.; Shmuilov, Nikolai G.; Beilinson, Iosif D.; and Zats, Boris S., 4,225,541, Cl. 261-114.0VT.
Zecevic, Vladimir: *See*—
Bellaiche, Hubert; and Zecevic, Vladimir, 4,225,388, Cl. 176-19.0LD.
Zeigler, George E., Jr.; Sumpter, Charles B., Jr.; and Wortham, Carl A., to Fieldcrest Mills, Inc. Apparatus for manufacturing pillowcases. 4,224,883, Cl. 112-10.000.
Zenda, Richard J.: *See*—
Malacheski, Joseph J.; and Zenda, Richard J., 4,224,854, Cl. 83-745.000.
Zetting, Alois; and Kopfli, Markus, to Cerberus AG. Method and apparatus for monitoring sound-conducting media. 4,225,859, Cl. 340-566.000.
Zimmer, Larry J.: *See*—
Tone, Melvin N.; Zimmer, Larry J.; and Jewett, James W., 4,224,994, Cl. 169-9.000.
Zimmerman, Jerrold. Portable exercise device. 4,225,130, Cl. 272-73.000.
Zimmermann, Hans; Pieper, Fritz; Blauth, Konrad; and Nagel, Hartmut, to VEB Polygraph Leipzig Kombinat fuer Polygraphische Maschinen und Ausruestungen. Sheet guidance arrangement in printing-machine outfeed units. 4,225,129, Cl. 271-204.000.
Zitz, Alfred; Schetina, Otto; and Kogler, Peter, to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Device for sealing the gap between component parts rotatable relative to each other. 4,225,144, Cl. 277-12.000.
Zoecon Corporation: *See*—
Henrick, Clive A., 4,225,533, Cl. 260-465.00D.
Zolt, David M. Turntable system with low aggregate resonance. 4,225,142, Cl. 274-39.00A.
Zorn, Bruno: *See*—
Schuster, Karl-Ernst; Rosenkranz, Hans J.; Rudolph, Hans; Fuhr, Karl; Zorn, Bruno; and Traubel, Harro, 4,225,695, Cl. 528-75.000.
Zscheile, John W., Jr.; and Spencer, Billie M., to Sperry Corporation. Coding method and system with enhanced security. 4,225,935, Cl. 364-717.000.
Zsembery, Laszlo: *See*—
Matyasi, Jozsef; Kokeny, Bela; Zsembery, Laszlo; Kaptay, Gyorgy; and Nemeth, Sandor, 4,225,639, Cl. 427-372.200.
Zuckler, Karl, to Siemens Aktiengesellschaft. Gas blast circuit breaker. 4,225,762, Cl. 200-144.00R.
Zuendt, Richard F.; Bengali, Ajay M.; Readio, Philip D.; and Allan, John L. H., to Dart Industries Inc. Non-chromate conversion coatings. 4,225,351, Cl. 106-14.120.
Zuendt, Richard F.: *See*—
Allan, John L. H.; Readio, Philip D.; Bengali, Ajay M.; and Zuendt, Richard F., 4,225,350, Cl. 106-14.120.
Zwar, Kurt: *See*—
Raggenbass, Werner; and Zwar, Kurt, 4,225,961, Cl. 371-36.000.
Zyvex International: *See*—
Horn, Jerry, 4,225,057, Cl. 222-27.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF SEPTEMBER, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Standard Inc.: *See*—
Hart, James E., Re. 30,408, Cl. 303-35.000.

Borsheim, Lewis A. Powered contaminant evacuator. Re. 30,409, Cl. 55-429.000.

Hart, James E., to American Standard Inc. Brake apparatus with a combined brake cylinder and reservoir. Re. 30,408, Cl. 303-35.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Rao, V. Durga N., 257,175, Cl. D24-29.000.

Ajeman, Robert W. Corrosion test meter. 257,131, 9-30-80, Cl. D10-81.000.

Aksjeselskapet Jotul: *See*—
Sommerschild, Henrik W., 257,172, Cl. D23-97.000.

Alshin, Harry A. Violin bow grip. 257,152, 9-30-80, Cl. D17-20.000.

American Cyanamid Company: *See*—
Grip, John A., 257,124, Cl. D9-23.000.

American Home Products Corp.: *See*—
Henderson, Gary A.; and Williams, Guy H., Jr., 257,171, Cl. D22-99.000.
Johnson, Edward J., 257,126, Cl. D9-187.000.

AMG Industries, Inc.: *See*—
Anderson, William M., 257,115, Cl. D7-85.000.

Amicone, Anthony V.; and Cesare, Frank C., to Keds Corporation, The. Sole for a shoe. 257,075, 9-30-80, Cl. D2-320.000.

Amicone, Anthony V.; and Cesare, Frank C., to Keds Corporation, The. Sole for a shoe. 257,076, 9-30-80, Cl. D2-320.000.

Anderson, R. Eric: *See*—
Woods, George H.; Oei, Tim I. K.; and Anderson, R. Eric, 257,153, Cl. D18-13.000.

Anderson, William M., to AMG Industries, Inc. Microwave oven roasting rack. 257,115, 9-30-80, Cl. D7-85.000.

Angenieux-CLB S.A.: *See*—
Lauzier, Rene, 257,143, Cl. D12-179.000.

Aulbert, Harold V., to Vaughan Furniture Company. Combined chest and bookcase unit or the like. 257,094, 9-30-80, Cl. D6-153.000.

Baird, Thomas A. Lunch box. 257,114, 9-30-80, Cl. D7-76.000.

Balma, Lawrence M.; and Dominy, David A., to Tracker Designs, Ltd. Skateboard. 257,164, 9-30-80, Cl. D21-227.000.

Berger, Gerald W.: *See*—
Bruce, James T.; and Berger, Gerald W., 257,183, Cl. D99-9.000.

Berman, James S.; and Stegmaier, Sigurd, to Citibank, N.A. Wall mounted multiple desk unit. 257,092, 9-30-80, Cl. D6-128.000.

Berman, James S.; and Stegmaier, Sigurd, to Citibank, N.A. Multiple teller counter unit. 257,099, 9-30-80, Cl. D6-157.000.

Berman, James S.; and Stegmaier, Sigurd, to Citibank, N.A. Multiple position counter unit. 257,100, 9-30-80, Cl. D6-157.000.

Bigge, David, to Champion International Corporation. Mobile paper carrier. 257,139, 9-30-80, Cl. D12-25.000.

Boaler, Maurice G. Serving bowl. 257,106, 9-30-80, Cl. D7-1.000.

Bogner, Paul. Hamper frame. 257,119, 9-30-80, Cl. D7-189.000.

Brittner, Frank W., to J & J Snack Foods Corp. Snack bar or similar article. 257,093, 9-30-80, Cl. D6-144.000.

Britton, Harold G. Tree cutter attachment for a tractor or like apparatus. 257,150, 9-30-80, Cl. D15-28.000.

Brown, Lorin B. Combined nail file and writing implement clip. 257,181, 9-30-80, Cl. D28-59.000.

Brown, Lorin B. Blank for combined nail file and writing implement clip. 257,182, 9-30-80, Cl. D28-59.000.

Bruce, James T.; and Berger, Gerald W. Casket bier. 257,183, 9-30-80, Cl. D99-9.000.

Burke, Ray W. Guitar pick. 257,151, 9-30-80, Cl. D17-20.000.

C.K.G. Products Corporation: *See*—
Globus, James R., 257,079, Cl. D3-33.000.

Campo, Charles. Lamp. 257,179, 9-30-80, Cl. D26-95.000.

Carr, Charles P. 50 Star flag. 257,135, 9-30-80, Cl. D11-179.000.

Carr, Charles P. 50 Star flag. 257,136, 9-30-80, Cl. D11-179.000.

Carr, Charles P. 52 Star flag. 257,137, 9-30-80, Cl. D11-179.000.

Carr, Charles P. 50 Star flag. 257,138, 9-30-80, Cl. D11-179.000.

Cassano's Inc.: *See*—
Poelvoorde, Raymond M.; and Woolley, Norman L., 257,176, Cl. D25-22.000.

Cesare, Frank C.: *See*—
Amicone, Anthony V.; and Cesare, Frank C., 257,075, Cl. D2-320.000.
Amicone, Anthony V.; and Cesare, Frank C., 257,076, Cl. D2-320.000.

Champion International Corporation: *See*—
Bigge, David, 257,139, Cl. D12-25.000.
Roccaforte, Harry I., 257,127, Cl. D9-245.000.

Citibank, N.A.: *See*—
Berman, James S.; and Stegmaier, Sigurd, 257,092, Cl. D6-128.000.
Berman, James S.; and Stegmaier, Sigurd, 257,099, Cl. D6-157.000.
Berman, James S.; and Stegmaier, Sigurd, 257,100, Cl. D6-157.000.

Concrete Design Specialties, Inc.: *See*—
Nasvik, Jonathan, 257,178, Cl. D25-58.000.

Conti, Rino, to Dart Industries Inc. Compartmented serving tray or the like. 257,109, 9-30-80, Cl. D7-38.000.

Conti, Rino, to Dart Industries Inc. Compartmented dish or the like. 257,110, 9-30-80, Cl. D7-38.000.

Cooper Canada Limited: *See*—
Jenkins, David C., 257,073, Cl. D2-232.000.

Crafco, Inc.: *See*—
Jacobson, Carl C., 257,149, Cl. D15-27.000.

Crosbie, William D., Sr. Storage cabinet for safety equipment or the like. 257,091, 9-30-80, Cl. D6-127.000.

Crowe, Dennis C.: *See*—
Peterson, Albert E.; and Crowe, Dennis C., 257,101, Cl. D6-157.000.

Daenen, Robert H. C. M.; and De Coster, Pieter K. J., to Dart Industries Inc. Food container or the like. 257,107, 9-30-80, Cl. D7-1.000.

Daenen, Robert H. C. M., to Dart Industries Inc. Dish or the like. 257,108, 9-30-80, Cl. D7-1.000.

Daiwa Seiko Kabushiki Kaisha: *See*—
Okada, Kiyoshi, 257,168, Cl. D22-25.000.

Danz, Ellworth R., to General Time Corporation. Clock. 257,129, 9-30-80, Cl. D10-23.000.

Dart Industries Inc.: *See*—
Conti, Rino, 257,109, Cl. D7-38.000.
Conti, Rino, 257,110, Cl. D7-38.000.
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 257,107, Cl. D7-1.000.
Daenen, Robert H. C. M., 257,108, Cl. D7-1.000.

De Coster, Pieter K. J.: *See*—
Daenen, Robert H. C. M.; and De Coster, Pieter K. J., 257,107, Cl. D7-1.000.

Demarest, Vincent M. Fencing section. 257,177, 9-30-80, Cl. D25-38.000.

DeNardo, Adrian L.; and DeNardo, Judy V. Sewing floss holder. 257,078, 9-30-80, Cl. D3-23.000.

DeNardo, Judy V.: *See*—
DeNardo, Adrian L.; and DeNardo, Judy V., 257,078, Cl. D3-23.000.

Diversified Plastics Products Inc.: *See*—
McCaffrey, James A., 257,113, Cl. D7-70.000.

Dixson, Tommy W. Motorcycle accessory console. 257,142, 9-30-80, Cl. D12-114.000.

Dominy, David A.: *See*—
Balma, Lawrence M.; and Dominy, David A., 257,164, Cl. D21-227.000.

Douglas, F. Milo. Backrest for use in a bathtub. 257,089, 9-30-80, Cl. D6-86.000.

Elie, Francois, to Mason, Fenwick & Lawrence. Fishing reel. 257,169, 9-30-80, Cl. D22-25.000.

Englishtown Sportswear, Ltd.: *See*—
Heinfling, Martin, 257,072, Cl. D2-25.000.

Ezell, James D. Outdoor play device. 257,165, 9-30-80, Cl. D21-243.000.

Fantasia Confections, Inc.: *See*—
Lakatos, Charles; and Weil, Nina E., 257,116, Cl. D7-96.000.

Farmer, Douglas B., Jr. Door stop. 257,123, 9-30-80, Cl. D8-402.000.

Fennell, Robert G. Alphabet. 257,155, 9-30-80, Cl. D18-24.000.

Filtron Company, Inc.: *See*—
Steiner, Gertrude, 257,117, Cl. D7-99.000.

First Novelty Co., Ltd.: *See*—
Lin, Meng-Hsiung, 257,095, Cl. D6-153.000.

Flesche, Klaus, to Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft. Bus. 257,141, 9-30-80, Cl. D12-84.000.

Fortuin, R. J. H. Display stand. 257,104, 9-30-80, Cl. D6-189.000.
Francian, Raffi; and Scavo, Giovanni, to Scavo, Giovanni. Skin treatment console. 257,173, 9-30-80, Cl. D24-1.100.
Fuller, Charles R.; and Fuller, John P. Liner for an infant's seat. 257,084, 9-30-80, Cl. D6-48.000.
Fuller, Charles R.; and Fuller, John P. Liner for a seat. 257,085, 9-30-80, Cl. D6-48.000.
Fuller, Charles R.; and Fuller, John P. Liner for a car seat. 257,086, 9-30-80, Cl. D6-48.000.
Fuller, John P.: *See*—
Fuller, Charles R.; and Fuller, John P., 257,084, Cl. D6-48.000.
Fuller, Charles R.; and Fuller, John P., 257,085, Cl. D6-48.000.
Fuller, Charles R.; and Fuller, John P., 257,086, Cl. D6-48.000.
Gateway Systems Corporation: *See*—
Valestin, James C., 257,146, Cl. D14-45.000.
Gauthier, Colin E. Support stand for a head phone set. 257,083, 9-30-80, Cl. D6-20.000.
General Time Corporation: *See*—
Danz, Ellworth R., 257,129, Cl. D10-23.000.
Globus, James R., to C.K.G. Products Corporation. Camera holster. 257,079, 9-30-80, Cl. D3-33.000.
Grip, John A., to American Cyanamid Company. Decanter. 257,124, 9-30-80, Cl. D9-23.000.
Groseclose, Pauline I. Blood specimen supply cart. 257,140, 9-30-80, Cl. D12-28.000.
Gucci, Aldo. Sneaker. 257,074, 9-30-80, Cl. D2-310.000.
Guetat, Paul, to Societe Majolane du Meuble S.A. Chair. 257,088, 9-30-80, Cl. D6-69.000.
Hansa Plastics Inc.: *See*—
Schmidt, Harald, 257,080, Cl. D3-35.000.
Heap, Jean W., to Pendelfin Studios Limited. Mother rabbit holding a baby rabbit figure. 257,162, 9-30-80, Cl. D21-187.000.
Heinfling, Martin, to Englishtown Sportswear, Ltd. Pocket for jeans or the like. 257,072, 9-30-80, Cl. D2-25.000.
Henderson, Gary A.; and Williams, Guy H., Jr., to American Home Products Corp. Combined electric shocking device for personal protection and guard therefor or the like. 257,171, 9-30-80, Cl. D22-99.000.
Hogue Combat Grips, Inc.: *See*—
Hogue, Guy, 257,166, Cl. D22-1.000.
Hogue, Guy, to Hogue Combat Grips, Inc. One piece pistol grip. 257,166, 9-30-80, Cl. D22-1.000.
Houlberg, Jorn P., to Internationale Finanz-, Gewerbe- und Handels-Anstalt. Handle for a carry bag. 257,128, 9-30-80, Cl. D9-292.000.
Hubbard, Dale J.; and Jackson, Jon W. Portable card playing tray. 257,159, 9-30-80, Cl. D21-57.000.
Internationale Finanz-, Gewerbe- und Handels-Anstalt: *See*—
Houlberg, Jorn P., 257,128, Cl. D9-292.000.
Itoh, Kunio: *See*—
Yamada, Norio; and Itoh, Kunio, 257,157, Cl. D19-54.000.
J & J Snack Foods Corp.: *See*—
Brittner, Frank W., 257,093, Cl. D6-144.000.
Jackson, Jon W.: *See*—
Hubbard, Dale J.; and Jackson, Jon W., 257,159, Cl. D21-57.000.
Jacobson, Carl C., to Crafco, Inc. Paving crack sealer machine. 257,149, 9-30-80, Cl. D15-27.000.
Jenkins, David C., to Cooper Canada Limited. Sports helmet. 257,073, 9-30-80, Cl. D2-232.000.
Johnson, Edward J., to American Home Products Corp. Pharmaceutical dispensing container or the like. 257,126, 9-30-80, Cl. D9-187.000.
Keds Corporation, The: *See*—
Amicone, Anthony V.; and Cesare, Frank C., 257,075, Cl. D2-320.000.
Amicone, Anthony V.; and Cesare, Frank C., 257,076, Cl. D2-320.000.
King, Halm C., Jr. Tool holder. 257,090, 9-30-80, Cl. D6-125.000.
L.J.N. Toys, Ltd.: *See*—
Matsumoto, Susan M., 257,161, Cl. D21-144.000.
Lakatos, Charles; and Weil, Nina E., to Fantasia Confections, Inc. Baker's muffin tray. 257,116, 9-30-80, Cl. D7-96.000.
Lauzier, Rene, to Angenieux-CLB S.A. Brake bracket for bicycles. 257,143, 9-30-80, Cl. D12-179.000.
Lea, Melvin A., to Oneida Ltd. Spoon or similar article. 257,118, 9-30-80, Cl. D7-137.000.
Lee, James E. Stereo cabinet. 257,096, 9-30-80, Cl. D6-154.000.
Lerner, Lawrence; and Schmitt, Fred, to Litton Business Systems, Inc. Desk or similar article. 257,102, 9-30-80, Cl. D6-161.000.
Lin, Meng-Hsiung, to First Novelty Co., Ltd. Flower pot stand. 257,095, 9-30-80, Cl. D6-153.000.
Litton Business Systems, Inc.: *See*—
Lerner, Lawrence; and Schmitt, Fred, 257,102, Cl. D6-161.000.
Lo, Kun N. Squash racket. 257,163, 9-30-80, Cl. D21-212.000.
Lucas Electrical Limited: *See*—
Price, Clifford D., 257,122, Cl. D8-396.000.
Maschinenfabrik Augsburg-Nuernberg Aktiengesellschaft: *See*—
Flesche, Klaus, 257,141, Cl. D12-84.000.
Mason, Fenwick & Lawrence: *See*—
Elie, Francois, 257,169, Cl. D22-25.000.
Matsumoto, Susan M., to L.J.N. Toys, Ltd. Toy clock. 257,161, 9-30-80, Cl. D21-144.000.
McCaffrey, James A., to Diversified Plastics Products Inc. Food and beverage caddy. 257,113, 9-30-80, Cl. D7-70.000.
McGourty, Michael J., to Pye (Electronics Products) Limited. Microphone. 257,144, 9-30-80, Cl. D14-12.000.
McKeown, John M., Jr., to San Diego Federal Savings and Loan Association. Combined computer terminal support and attachments for written instructions. 257,103, 9-30-80, Cl. D6-184.000.
McKinnon, Robert M. Lid. 257,133, 9-30-80, Cl. D10-103.000.
Mescheder, Donald G. Automobile starter housing. 257,147, 9-30-80, Cl. D15-5.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
Sibukawa, Kozo; and Nishikata, Goro, 257,130, Cl. D10-73.000.
Morford, Marvin A. Portable sprayer. 257,148, 9-30-80, Cl. D15-13.000.
Morris, Frank L. A. Pillow insert. 257,105, 9-30-80, Cl. D6-201.000.
Nasvik, Jonathan, to Concrete Design Specialties, Inc. Molded concrete and fiberglass panel to isolate wood burning stoves from floors and walls. 257,178, 9-30-80, Cl. D25-58.000.
National Tea Company: *See*—
Peterson, Albert E.; and Crowe, Dennis C., 257,101, Cl. D6-157.000.
Nishikata, Goro: *See*—
Sibukawa, Kozo; and Nishikata, Goro, 257,130, Cl. D10-73.000.
Oei, Tim I. K.: *See*—
Woods, George H.; Oei, Tim I. K.; and Anderson, R. Eric, 257,153, Cl. D18-13.000.
Okada, Kiyoshi, to Daiwa Seiko Kabushiki Kaisha. Fishing reel. 257,168, 9-30-80, Cl. D22-25.000.
Olsson, Rune J., to Produnik Aktiebolag. Document clip. 257,158, 9-30-80, Cl. D19-65.000.
Oneida Ltd.: *See*—
Lea, Melvin A., 257,118, Cl. D7-137.000.
Pelletier, Jennie. Pencil novelty. 257,156, 9-30-80, Cl. D19-42.000.
Pendelfin Studios Limited: *See*—
Heap, Jean W., 257,162, Cl. D21-187.000.
Pentel Kabushiki Kaisha: *See*—
Yamada, Norio; and Itoh, Kunio, 257,157, Cl. D19-54.000.
Peterson, Albert E.; and Crowe, Dennis C., to National Tea Company. Combined storage and display unit. 257,101, 9-30-80, Cl. D6-157.000.
Pitney Bowes Inc.: *See*—
Woods, George H.; Oei, Tim I. K.; and Anderson, R. Eric, 257,153, Cl. D18-13.000.
Poelvoorde, Raymond M.; and Woolley, Norman L., to Cassano's Inc. Building. 257,176, 9-30-80, Cl. D25-22.000.
Price, Clifford D., to Lucas Electrical Limited. Mounting bracket for a motorcycle accessory. 257,122, 9-30-80, Cl. D8-396.000.
Produnik Aktiebolag: *See*—
Olsson, Rune J., 257,158, Cl. D19-65.000.
Punshon, William: *See*—
Tumbrink, Terence M.; and Punshon, William, 257,134, Cl. D11-157.000.
Pye (Electronics Products) Limited: *See*—
McGourty, Michael J., 257,144, Cl. D14-12.000.
Rao, V. Durga N., to Abbott Laboratories. Cuvette assembly. 257,175, 9-30-80, Cl. D24-29.000.
Ricoh Company, Ltd.: *See*—
Soda, Kohichi, 257,145, Cl. D14-44.000.
Roccaforte, Harry I., to Champion International Corporation. Slide top dispenser carton blank. 257,127, 9-30-80, Cl. D9-245.000.
Roset, Pierre E. C., to Roset S.A. Geneve. Chair or similar article. 257,087, 9-30-80, Cl. D6-67.000.
Roset S.A. Geneve: *See*—
Roset, Pierre E. C., 257,087, Cl. D6-67.000.
Ryder International Corporation: *See*—
Thomas, Michael D., 257,174, Cl. D24-9.000.
Ryobi, Ltd.: *See*—
Sakamoto, Masakazu; and Shohoji, Takeshi, 257,170, Cl. D22-25.000.
Shohoji, Takeshi; and Tsunoda, Kikuo, 257,167, Cl. D22-25.000.
Sakamoto, Masakazu; and Shohoji, Takeshi, to Ryobi, Ltd. Fishing reel. 257,170, 9-30-80, Cl. D22-25.000.
San Diego Federal Savings and Loan Association: *See*—
McKeown, John M., Jr., 257,103, Cl. D6-184.000.
Scavo, Giovanni: *See*—
Francian, Raffi; and Scavo, Giovanni, 257,173, Cl. D24-1.100.
Schmidt, Harald, to Hansa Plastics Inc. Tape cassette mailing case. 257,080, 9-30-80, Cl. D3-35.000.
Schmitt, Fred: *See*—
Lerner, Lawrence; and Schmitt, Fred, 257,102, Cl. D6-161.000.
Schramm, Walter. Wheel balancer. 257,132, 9-30-80, Cl. D10-82.000.
Shohoji, Takeshi; and Tsunoda, Kikuo, to Ryobi, Ltd. Fishing reel. 257,167, 9-30-80, Cl. D22-25.000.
Shohoji, Takeshi: *See*—
Sakamoto, Masakazu; and Shohoji, Takeshi, 257,170, Cl. D22-25.000.
Sibukawa, Kozo; and Nishikata, Goro, to Mitutoyo Mfg. Co., Ltd. Combined digital and dial caliper. 257,130, 9-30-80, Cl. D10-73.000.
Smali, Luigi A. G. Bottle. 257,125, 9-30-80, Cl. D9-129.000.
Smith, Melbourne F., Jr. Buffet. 257,097, 9-30-80, Cl. D6-154.000.
Smith, Melbourne F., Jr. Hutch. 257,098, 9-30-80, Cl. D6-154.000.
Societe Majolane du Meuble S.A.: *See*—
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Berman, James S.; and Stegmaier, Sigurd, 257,099, Cl. D6-157.000.
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Valiga, Richard A., 257,180, Cl. D28-35.000.
Thomas, Michael D., to Ryder International Corporation. Contact lens sterilizer unit. 257,174, 9-30-80, Cl. D24-9.000.
Tracker Designs, Ltd.: *See*—
Balma, Lawrence M.; and Dominy, David A., 257,164, Cl. D21-227.000.
Tsunoda, Kikuo: *See*—
Shohoji, Takeshi; and Tsunoda, Kikuo, 257,167, Cl. D22-25.000.
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Henderson, Gary A.; and Williams, Guy H., Jr., 257,171, Cl. D22-99.000.
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ISSUED SEPTEMBER 30, 1980

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CLASS 2

161 R 4,224,692
241 4,224,693
422 4,224,694

CLASS 3

1.91 4,224,695
1.911 4,224,696
4,224,697
1.912 4,224,698
1.913 4,224,699

CLASS 4

206 4,224,701
252 R 4,224,702
324 4,224,703
603 4,224,700

CLASS 5

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400 4,224,705
449 4,224,706

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148 4,225,309
474 4,225,313
491 4,225,310
524 4,225,311

CLASS 9

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CLASS 12

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33 4,225,745

CLASS 14

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81 TH 4,224,721
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436 4,224,780
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CLASS 92

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CLASS 98

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CLASS 99

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453 4,224,865

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CLASS 105

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CLASS 111

7 4,224,882

CLASS 112

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79 R 4,224,884
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CLASS 113

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CLASS 114

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294 4,224,892

CLASS 116

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452 4,224,914
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CLASS 171

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CLASS 172

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255 4,225,002

CLASS 178

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111 E 4,225,755
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CLASS 229

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328.2 4,225,554

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371 4,225,813

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39 4,225,815

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258 R 4,225,210

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7.7 4,225,864
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254 4,225,906
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376 4,225,910

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160 4,225,914

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4,225,918
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4,225,940
4,225,941
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149 4,225,945
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238 4,225,947
239 4,225,948

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251 4,225,248

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97 4,225,950
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117 4,225,953
118 4,225,954
131 4,225,955

CLASS 368

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4 4,225,753
62 4,225,956

CLASS 371

15 4,225,957
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38 4,225,959
47 4,225,960

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2 4,225,962
28 4,225,963
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124 4,225,250
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498 4,225,281
694 4,225,282
723 4,225,283

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548 4,225,627
549 4,225,628
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623 4,225,630

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96 4,225,633
101 4,225,634
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372.2 4,225,639

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405 4,225,650
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515 4,225,652
539 4,225,653

CLASS 429

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100 4,225,655
191 4,225,656
248 4,225,657

CLASS 430

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5 4,225,659
108 4,225,660
156 4,225,661
173 4,225,662
303 4,225,663
306 4,225,664
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569 4,225,666

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182 4,225,305

CLASS 432

24 4,225,306
234 4,225,307

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162 4,225,667
176 4,225,668

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41 4,225,670
71 4,225,671
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122 4,225,674
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226 4,225,823
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346 4,225,724

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775 4,225,731
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723 4,225,742

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	320	257,075
		257,076
	400	257,077
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	33	257,079
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		257,085
		257,086
	67	257,087
	69	257,088
	86	257,089
	97	257,082
	125	257,090
	127	257,091
	128	257,092
	144	257,093
	153	257,094
		257,095
	154	257,096
		257,097
		257,098
	157	257,099
		257,100
		257,101
	161	257,102
	184	257,103
	189	257,104
	201	257,105
D7—	1	257,106
		257,107
		257,108
	38	257,109
		257,110
	43	257,111
		257,112
	70	257,113
	76	257,114
	85	257,115
	96	257,116
	99	257,117
	137	257,118
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		257,121
	396	257,122
	402	257,123
D9—	23	257,124
	129	257,125
	187	257,126
	245	257,127
	292	257,128
D10—	23	257,129
	73	257,130
	81	257,131
	82	257,132
	103	257,133
D11—	157	257,134
	179	257,135
		257,136
		257,137
		257,138
D12—	25	257,139
	28	257,140
	84	257,141
	114	257,142
	179	257,143
D14—	12	257,144
	44	257,145
	45	257,146
D15—	5	257,147
	13	257,148
	27	257,149
	28	257,150
D17—	20	257,151
		257,152
D18—	13	257,153
	22	257,154
	24	257,155
D19—	42	257,156
	54	257,157
	65	257,158
D21—	57	257,159
	87	257,160
	144	257,161
	187	257,162
	212	257,163
	227	257,164
	243	257,165
D22—	1	257,166
	25	257,167
		257,168
		257,169
		257,170
	99	257,171
D23—	97	257,172
D24—	1.1	257,173
	9	257,174
	29	257,175
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	4,224,759		4,224,958		4,225,880		4,225,095		4,225,365		4,225,812
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	4,225,849		4,225,235		4,225,924		4,225,970		4,225,661		4,225,076
	4,225,852		4,225,243	09 :	4,224,772		4,225,976		4,225,684		4,225,299
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	4,225,959		4,225,649		4,225,521		4,224,875		4,225,856		4,225,220
05 :	4,225,134		4,225,678		4,225,615		4,224,935	19 :	4,224,899		4,225,230
	4,225,135		4,225,700		4,225,665		4,224,942		4,224,994		4,225,240
	4,225,318		4,225,712	11 :	4,225,298		4,224,951		4,225,036		4,225,491
06 :	4,224,704		4,225,734		4,225,587		4,224,965		4,225,059		4,225,500
	4,224,710		4,225,752	12 :	4,224,714		4,224,972		4,225,064		4,225,531
	4,224,713		4,225,755		4,224,745		4,225,034		4,225,107		4,225,631
	4,224,726		4,225,760		4,224,810		4,225,039		4,225,151		4,225,705
	4,224,733		4,225,763		4,224,825		4,225,047		4,225,583		4,225,782
	4,224,734		4,225,777		4,224,889		4,225,052	20 :	4,224,867		4,225,790
	4,224,757		4,225,778		4,224,893		4,225,056		4,225,123		4,225,792
	4,224,760		4,225,784		4,224,901		4,225,082	21 :	4,224,737		4,225,797
	4,224,762		4,225,821		4,224,953		4,225,128		4,224,862		4,225,840
	4,224,784		4,225,845		4,224,954		4,225,174		4,225,145		4,225,853
	4,224,803		4,225,850		4,224,995		4,225,210		4,225,189		4,225,877
	4,224,864		4,225,861		4,225,013		4,225,255		4,225,249		4,225,896
	4,224,905		4,225,863		4,225,041		4,225,261		4,225,478		4,225,900
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